

COAL AGE

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Number 1

This Is the House That Jack Built

WITH the forward-moving precision of the childhood rhyme, Government supervision of the coal industry is progressing. After six months' duration fixed prices were removed April 1, on the assumption that the after-effects of the strike were past and that the coal business should be allowed to go forward on a normal basis. Business would have proceeded normally had it not been for the curtailment in production resulting from the strike on the railroads beginning early that month. Through control of the railroads the Interstate Commerce Commission has been, and is still, engaged in trying to set aright the coal situation. First an order was issued directing eastward thousands of coal cars which had strayed west of the Mississippi during the coal strike last winter. Then came the order directing the carriers to give the mines at least 50-per cent car supply before permitting cars to be given for other uses, and also prohibiting the loading of automobiles in open-top cars. The situation in the Northwest next engaged the attention of the commission, and shipments of bituminous coal to Lake Erie for transshipment to the Northwest were pooled.

New England, believing that a serious shortage existed, begged for and obtained an order giving preference and priority to shipments destined for coastwise movement to that section. At the same time the commission made the 50-per cent order a 100-per cent mandate, directing that for thirty days open-top cars should be used for coal until all requirements were met. Now other sections of the country, notably New York, are coming forward, claiming preference.

Each order requires another to correct, or attempt to correct, the situation it inevitably produces as a byproduct of its main purpose. Each priority demands another to protect the next in line. Just as all the coastwise coal cannot be sent to New England even for a short time, no matter what her need, without crippling New York, so New England and New York cannot have all the coal without hurting New Jersey.

Priorities do not create coal; they simply pyramid trouble. Do not be deceived in the least—we now have a coal shortage. It can be shown by statistics that production is now sufficient for actual current consumption and exports *if evenly distributed*, that production from Jan. 1 or from April 1 has been greater this year than last, that conditions are on the mend, and that after all there is reason to believe that sufficient coal to protect the country can be produced before snow flies. The difficulty with this line of reasoning is that there is no quantitative measure of a coal shortage that can take into account the psychology of this situation. More bituminous coal is needed at once—the more the better—because every consumer is in a panic about his supply. No amount of reasoning will induce him to go out of

the market until conditions get better and prices go down. The shortage is from 75 to 90 per cent imaginary, but imagination is a powerful thing. Will anyone challenge the statement that many who are eagerly seeking coal at any price already have a normal stock on hand, but have been scared by the cries of shortage?

But why, it is asked, if production is now at a rate sufficient to care for actual current consumption, are railroads confiscating coal, public utilities threatening to shut down and factories closed for want of coal? Because the production is not being distributed in accordance with requirements, but in accord with price paid. The same situation prevailed from June, 1917, to April 1, 1918. The two situations are parallel in almost every respect. The country was at war then and is now; then with Germany, today with the after-effects of that war. Prices upset distribution in 1917, and the Fuel Administrator thought we were short 50,000,000 tons of bituminous coal, whereas careful estimates show that we lacked only some 10,000,000 tons to fill actual needs the country over.

The measures that have so far been taken to relieve the situation, excepting only the order giving absolute preference to coal in the distribution of open-top cars, are but patch-work, certain only to heap trouble on trouble. The season is young. Do not wait until next spring to handle the situation as it may have to be handled. Profit by the sad experience of 1917 and the winter which followed. The Car Service Commission of the American Railway Association has arranged liaison with the railroads, but liaison is insufficient and incomplete unless the coal industry itself is tied in. Dr. Garfield solved the distribution problem when he took the coal industry into partnership, after the two had worked at cross purposes for six months.

The coal industry has as much brains today as in 1918 and more experience; it is just as patriotic as during the war. Let the public—through the Government—the railroads and the coal industry re-establish the triumvirate of leadership and quickly decide whether it be better to temporize for a few months or go the limit at once, in order that our coal troubles may be over by fall, instead of just beginning.

The New England Order

SERVICE Order No. 6 of the Interstate Commerce Commission purposes to limit exports of bituminous coal by vessel to the extent necessary to provide New England and other sections on the Atlantic seaboard with necessary coal. The language of the order is not clear—the technical details by which New England is to have priority and preference in coal dumped at tide-water piers are not generally understood and are far from clearly expressed. Some time will be required to

develop the methods by which the interested railroads will set about the actual application of what is the plain purpose of those who framed the order. In the meantime speculation is rife as to whether the purpose can and will be achieved.

Plainly the order is an effort to give New England more coal by water. It has no other aim. The original request was for the absolute embargoing of export movement, to which all official Washington turned a deaf ear. We understand the order to say that a shipper of coal may bill his car of coal to any inland customer he chooses or he may bill it to a tidewater pool. No preference is ordered in the supply of cars or in the transportation of the car of coal as between a consignee, say, in Michigan, a railroad for fuel, a Lake pool or a tidewater pool. But once having the car as a credit in a tidewater pool the order, in spirit if not in letter, provides that that coal shall not be dumped into a boat for export destination if a New England or other coastwise consumer offers a boat in which to load the coal. Service Order No. 6 does not read thus in so many words and the order may not have been so drawn as to withstand the scrutiny of lawyers, but we believe that in a short time it will operate as we have outlined.

The order is not popular among tidewater shippers. It probably appeals to them as an unwarranted interference with their business. Some would rather not produce coal than be forced to ship it to New England. It seems to us inevitable, however, that the order will do that for which it is proposed. The greater part of the coal that can be either shipped coastwise or as export reaches tide at Baltimore and Hampton Roads. Shippers on the Baltimore & Ohio and Western Maryland railroads with an outlet at Baltimore have little opportunity to ship West and have limited facilities for reaching inland consumers.

Tidewater is the logical outlet for a considerable portion of the production originating on these two roads. The fields in southern West Virginia have outlets both East and West but it is not unusual for the Western outlets to become choked and to be embargoed. Witness the experience of last winter during the strike, when to maintain the full operation of the non-union mines in these fields it was necessary to dump thousands of cars at Hampton Roads because they could not be transported West and were not required in inland Eastern markets.

It follows that unless the operators deliberately and perhaps illegally curtail production, some minimum quantity of coal must be consigned to tidewater from West Virginia fields, and New England is certain to have first call on this coal at tidewater piers. Mr. J. J. Storrow, whose address is Boston, Mass., must depend upon his privilege of being able to put his boats alongside the piers with preference and priority for coal to coax the owner of the coal to come to terms, for he must buy the coal before he can have it.

Exports will not be seriously affected after Order No. 6 has been in operation for a few weeks, principally for the reason that, barring further labor trouble on the railroads, production will increase and so far this year the capacity of the coal dumping piers has not been reached. There is one advantage in the method the Government has taken to get coal to New England—the responsibility of taking care of the fuel supply

of a very important section of our country has been placed impartially on the industry as a whole and not left to the few.

Miners' Indifference Retards Production

IT IS easy to blame the railroads for all the shortage in supply of coal, but it is evident from reports coming from the mines that some improvement could be effected were the coal diggers more inclined to do their part. It daily happens in every field that there are cars left over at the end of the day and it nearly always happens that cars are left over on Saturday night—cars that, if loaded, could travel far on their way before Monday night. This condition arises from the fact that the miners know full well that there will be each day and week only so many cars to fill and that if these cars are not loaded today they will still be on hand to load the next day.

Not until each and every car has been loaded the day it is placed can the miners and operators place full responsibility on the carriers. True, not in the first week every mine began following this practice, nor even in the second week, would there be an increase in car supply, but if continued for a few weeks the turn-around on cars would begin to make itself felt in a better car supply. It is car days we are short of now, and a car day lost at the mines because the miner has a headache and does not feel like going to work or because it is Saturday afternoon and he would like to lay off means lost production.

It is useless to argue that what can be put off until tomorrow need not be done today. Why should not the miner feel some measure of national responsibility in this time of coal shortage and do his part by working hard the few days that the shortage of cars permits him to labor? Speed up the turn around; get some action at the mines by telling your men what they are doing by loafing any day or part of a day that there is an empty car behind the tippie.

A Question of Ownership

FEW are the central-station plants which are owned by a capitalist, who is primarily a coal operator, or by a subsidiary of a company organized with mine operation in view. Coal operators and mine-operating companies have too frequently failed to visualize their opportunities and too rarely entered a field which quite naturally belongs to them.

Coal operators leave the organization of power plants to central-station men, who open up new mines at once or some time later, and so add unnecessarily to the number of operations, and by their steady work upset the balance of the field. One would expect that the operator would see the advantage to himself in continuous operation and build a central-station plant for the supply of local operators and industrial plants, rather than leave the opportunity to others.

There seems to be a likelihood that there will soon be central-station plants the country over. They might as well belong to the coal operator as to a member of the electrical industry. They might as well be supplied with impure coal and slack from mines now existing as with the whole coal of mines opened especially for that purpose.

Survey Study of Stocks Nearly Completed

The study being made by the Geological Survey and the Bituminous Coal Commission of stocks and requirements of coal is nearing completion and a preliminary survey of the situation will be published in a few days.

Railroad Strike Breaks Out Again

During the past week switchmen and other railroad men have been on strike in the East, after it was thought that the men were going to stay at work until the Wage Board makes its award. The strike has tied up the Harrisburg, Baltimore, and Hagerstown gateways and seriously interfered with freight movement for nearly a week.

Coal Rates to St. Louis Upheld

The Interstate Commerce Commission has dismissed the application of the St. Louis Chamber of Commerce that St. Louis and East St. Louis be regarded as a common terminal with respect to the freight rates on coal from Indiana and Illinois. The commission held that the 20c. additional rate for the transfer of coal across the Mississippi River to St. Louis was not unreasonable.

Gas Association Protests Coal Exports

The American Gas Association filed with Attorney General Palmer, June 18, a protest against the heavy exportations of coal. Part of the protest reads: "The association appeals to you to exercise whatever authority may be vested in your office to bring about an immediate reduction in the volume of coal now being exported beyond the limits of the United States and its possessions. A similar appeal has been made to the President by formal resolution which fully explains the urgency of the situation from the standpoint of gas companies endeavoring to maintain an indispensable service to 45,000,000 people in the United States."

Canadian Roads Revoke Freight Prepayment on Coal

Canadian railroads have yielded to the protest against prepayment of American coal shipped into the Dominion and no longer will require prepayment of that portion of the charges between the border and destination. The American railroads are still requiring prepayment of their portion of the charges on the ground that there is no practical way of collecting their portion of the charges in American money at Canadian destination points. The American carriers suggest that they will be glad to discuss the matter

with all those concerned in case the Interstate Commerce Commission cares to call a conference for that purpose. Steps to secure such a conference are being undertaken by George H. Cushing, the managing director of the American Wholesale Coal Association. It is hoped to have present at the conference a representative of the British Embassy and of the Canadian Mission in Washington.

Commerce Bodies Favor Anti-Strike Laws

Two proposals dealing with the right of employees of public service corporations to strike were submitted June 9 by the U. S. Chamber of Commerce to a vote of commercial organizations comprising its mem-

for the purchase of additional tonnage. It has a contract with Italian interests for 2,000,000 tons of coal.

Mine Managers' Varied Interests

An editorial notice in the present issue calls attention to the varied interests of the mine manager, on whom rests the burden of creating new communities and establishing not only the mining but almost all other activities. Mining towns bear the impress of their originators and are good or bad according to the mental and moral plan on which they are conceived. The issue of Oct. 7, a Safety and Welfare Number, will emphasize the human engineering that every mining community needs.

Would End World's Coal Need

Affirming that America, Germany, England, France and Belgium in 1919 produced 210,000,000 tons less than in 1913, Otto Hue, at the International Economic Conference, at Frankfort-am-Main in May advocated an international coal conference at which all nations would be represented and all would have equal rights.

P. B. Noyes Leaves Coblenz

Pierepont B. Noyes, American observer on the Rhineland High Commission, left Coblenz on June 20 for England. He expects to sail for the United States July 14. Mr. Noyes was adviser on conservation matters to Dr. Garfield when the latter was U. S. Fuel Administrator.

Federal Trade Commission Issues Cost Report for March

The Federal Trade Commission has just issued its third monthly cost report, covering operations in March. The report shows a slight decrease in cost of production—9 cents per ton—due to better running time at the mines in March compared with February.

Appropriations by Congress Reach Nearly Five Billions

Chairman Good, of the House Appropriations Committee, on June 14 issued an end of the session statement of appropriations and expenditures, showing that expenditures authorized for the fiscal year opening July 1 aggregate nearly \$5,000,000,000. Total regular, permanent annual and miscellaneous appropriations and deficiency appropriations aggregates \$4,859,890,827.30. Mr. Good also made public a revised statement furnished by the Secretary in which it was estimated that receipts for the fiscal year 1920 would be \$7,691,157,196, and estimated expenditures during that period would be \$12,008,048,051.

NEWS BRIEFS

Terse Items Chronicling Events of Interest to the Industry

bership. The two recommendations were that strikes by employees of all public service corporations performing service essential to the lives, health, well being and comfort of the people should be explicitly prohibited by law, and that suitable tribunals should be created by law to adjudicate differences between such employees and their employers, the decisions to be final and binding on both parties.

France Receives German Coal

On June 14 the Reparations Commission announced in Paris that up to May 30 German deliveries of coal to France under the treaty of Versailles amounted to 4,686,000 tons.

Steamship Line Acquires Coal Acreage

Victor S. Fox and associates, who recently purchased control of the Consolidated Maritime Lines, have organized the Crystal Coal Corporation, which has acquired a substantial coal acreage in Virginia so that a steady fuel supply may be obtained for the tonnage of the Maritime Lines. The new organization is incorporated under the laws of Delaware.

The Maritime Lines, organized about a year ago, purchased a 200,000-ton fleet of vessels from the Shipping Board and is negotiating



John E. Lloyd

President of the National Retail Coal Merchants' Association

JOHN E. LLOYD, president of the National Retail Coal Merchants' Association, has been connected with the coal and lumber trade for about twenty years. He was born in Germantown in 1878, and since his graduation from Haverford College in 1900, has been affiliated with the William M. Lloyd Co., of Philadelphia, of which he is president. This company was organized by Mr. Lloyd's father, the late William M. Lloyd, in 1868.

Mr. Lloyd also is president of the Philadelphia Coal Exchange and is a member of the Lumbermen's Exchange, Chamber of Commerce and Builders' Exchange of Philadelphia. He is vice-president of the Braganza Lumber Co., vice-president of the Branford Lumber Co., both of Jacksonville, Fla.; first vice-president of the National Retail Lumber Dealers' Association; ex-president of the Sales Managers' Association of Philadelphia, and president of the Philadelphia Society for Promoting Agriculture, one of the oldest societies of its kind in existence.

During the World War at the request of the Quartermaster's Department, the retail lumber yards in the Eastern district formed an emergency bureau to assist the Government in the purchase and distribution of lumber from large stocks in the Eastern retail yards. Mr. Lloyd was elected chairman of this emergency committee and in that capacity moved to Washington early in 1917.

Through their national organization Mr. Lloyd also represented the retail coal merchants of the

country, acting as resident vice-president until February, 1919. During that period he spent most of his time in the Washington office of the National Retail Coal Merchants' Association and rendered valuable service not only to the retailers but to the Fuel Administration and the public.

Mr. Lloyd's qualities of leadership were strikingly demonstrated during the recent teamsters' strike in Philadelphia, when he drove a truck, without protection, and delivered coal from early morning until late at night. When the peril of this undertaking was called to his attention he replied that he wouldn't ask his men to do something he was not willing to undertake.

He has a host of friends in the coal and lumber business and is held in unusually high regard and esteem by his employees. At present he is deeply interested in the open-shop activities of the Chamber of Commerce, being a staunch supporter of this movement.

Mr. Lloyd is a member of the Union League, Markham Club and Church Club, Philadelphia; Merion Cricket Club, Haverford, Pa.; St. Nicholas Club, New York; Manufacturers' Club, Charlotte, S. C.; Cape Fear Club, Wilmington, N. C.; West Chester Golf and Country Club and the Tedyffrin Club.

His home is Valley Brook Farm, Downingtown, Pa., where he devotes much of his attention to the raising of pure bred Jersey cattle and other forms of farm activities.



MAIN-SHAFT TIPPLE WITH ITS HOIST HOUSE AND CONCRETE-BASE WALL

This tippie has four loading tracks, two picking tables and loading booms. The hoisting is done in skips, thus lessening the dead weight lifted per ton of coal, lowering the necessary hoisting speed and even, it is said, saving the coal from disintegration. Note the permanence of the hoist house, which is of brick and covered with asbestos shingles.

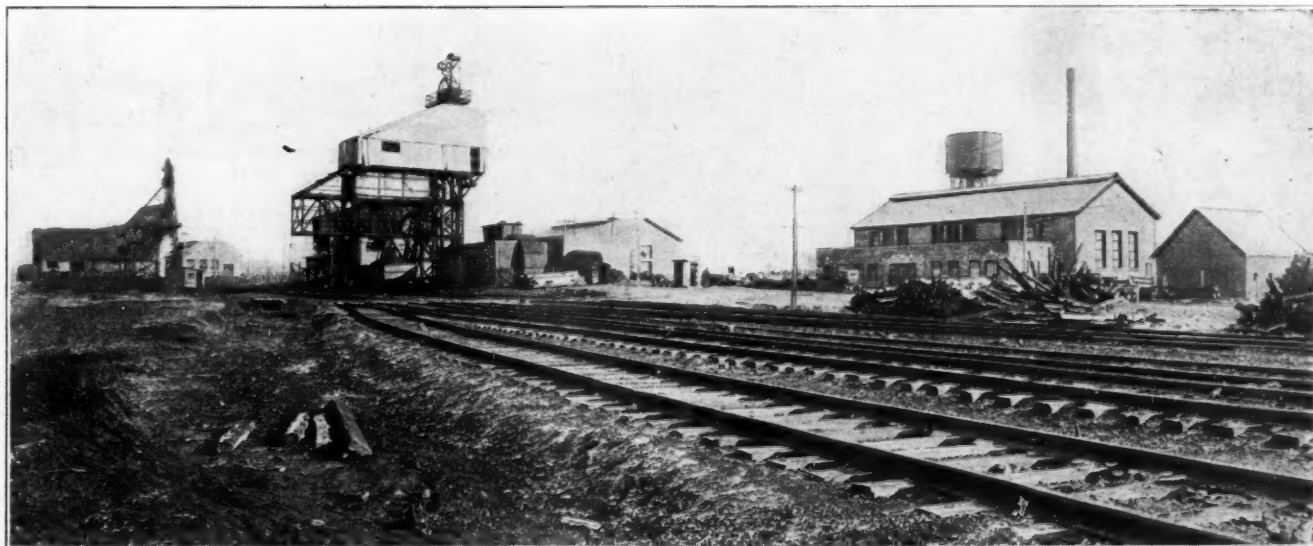
How the Valier Shaft Mine Was Quickly Developed for Large Daily Output—II

Hoist Can Raise 26 Tons Per Minute, Equal to 1,560 Tons Per Hour, and Has Actually Handled 1,058 Tons in That Period of Time — Alternating-Current Coal and Spring-Draft Mine Cars Are Among the Interesting Features

BY CARL SCHOLZ
Charlestown, W. Va.

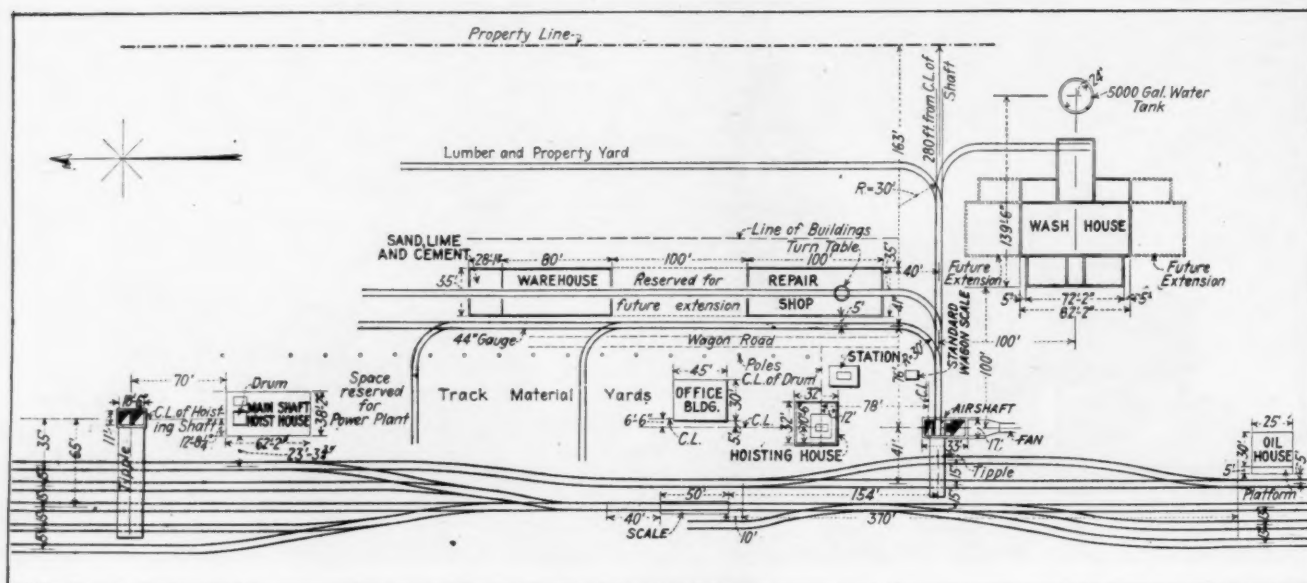
LAST week's installment described the surface equipment at the Valier mine, Valier, Ill., and it is the function of this second article to briefly outline the underground operations first, describing, however, the hoisting equipment which acts as a link between the two and in this case has novel characteristics.

The airshaft hoist house contains a 9 x 7-ft. drum hoist driven by a 250-hp. 2,300-volt motor through herringbone gears. This machine is equipped with the necessary safety devices to automatically bring the hoist to a stop. The contactors and resistance for this machine are placed in the basement on account of the



GENERAL VIEW OF THE ENTIRE MINE PLANT

On the right is the washhouse, in the center the shop, the fan and the airshaft tippie and on the extreme left the main shaft



PLAN OF SURFACE BUILDINGS AT MINE SHOWING TRACK LAYOUT AROUND TIPPLES

The various buildings are grouped near the airshaft, for it is by this opening that the men descend and all material is delivered to the mine, the other shaft being occupied by skips which are suited only for

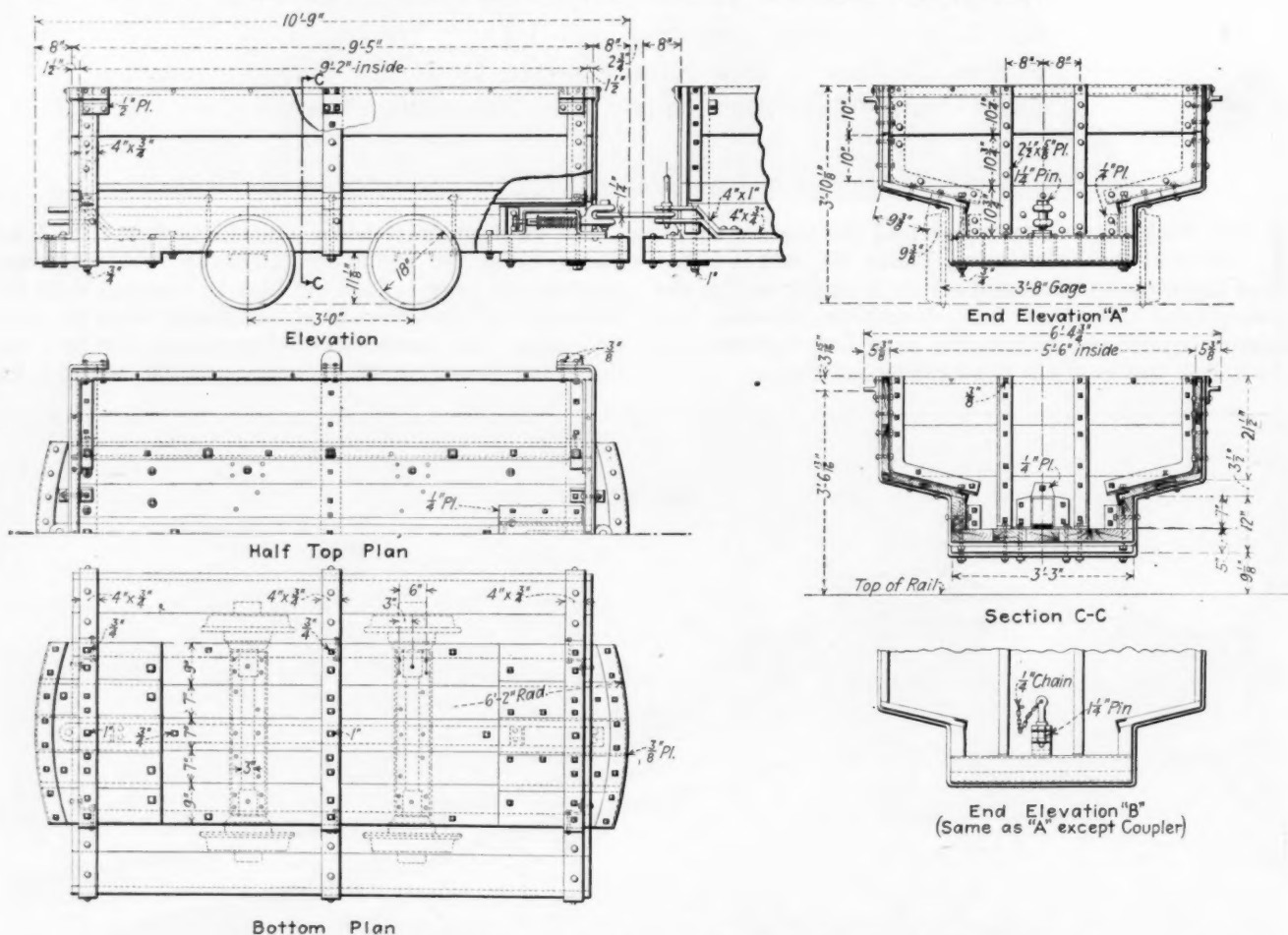
hoisting coal. It will be noted that there is no power plant. Because of a lack of water it was judged best to buy power, but conditions may change and space is reserved for an engine and boilerhouse.

handy to the main hoist, to be used if the company changes its policy in this regard. Plenty of room is left between the railroad tracks so that there is ample room for moving between cars.

noise and heat generated by them. This house also contains the main switchboard and all distributing panels, since an engineer is on duty in this building continuously. Immediately behind the hoist house is the 2,000-kva. transformer station.

The main hoist house contains the motor-generator

set and the hoist equipment, the latter consisting of one semi-automatic 1,350-hp. 55-r.p.m. 550-volt shunt-wound direct-current motor connected direct to a single cylindrical drum 9 ft. in diameter. The motor-generator set consists of a 1,000-kva. generator, an 1,100-hp. motor and a 31,000-lb. flywheel.



Bottom Plan

AN ALL-AROUND SAFETY-FIRST MINE CAR IS EMPLOYED AT THE VALIER MINE

Spring draft riggings, stiff couplings, large capacity and roller bearings are provided in the standard Valier mine car, but

above all it is a safe car, for it will not spread coal dust along the roads through loose doors nor will it catch clothing nor

be jerked violently like a car with a three-link coupling. Dispensing with two coupling links will add also to the life of the car.



Heading Machine

By using a machine which undercuts, shears, breaks down and loads the coal the Valier mine has made unusual speed in driving its entries, providing at the same time more solid walls and a more lasting roof. Powder shatters the ribs and roof and makes maintenance costs of permanent roadways heavy. By this machine 50 to 60 ft. of roadway have been driven in 24 hours.

This hoist is capable of handling eighteen tons of coal in forty-two seconds, which includes the eight seconds allowed for the dumping of the coal. Under test the tippie has actually dumped 1,058 tons per hour. This machine can be operated either from the platform in the hoist house or from the bottom of the shaft. It has not only the regular automatic control and a switch in the shaft tower but it is also equipped with a solenoid brake. Every hoisting outfit is substantial.

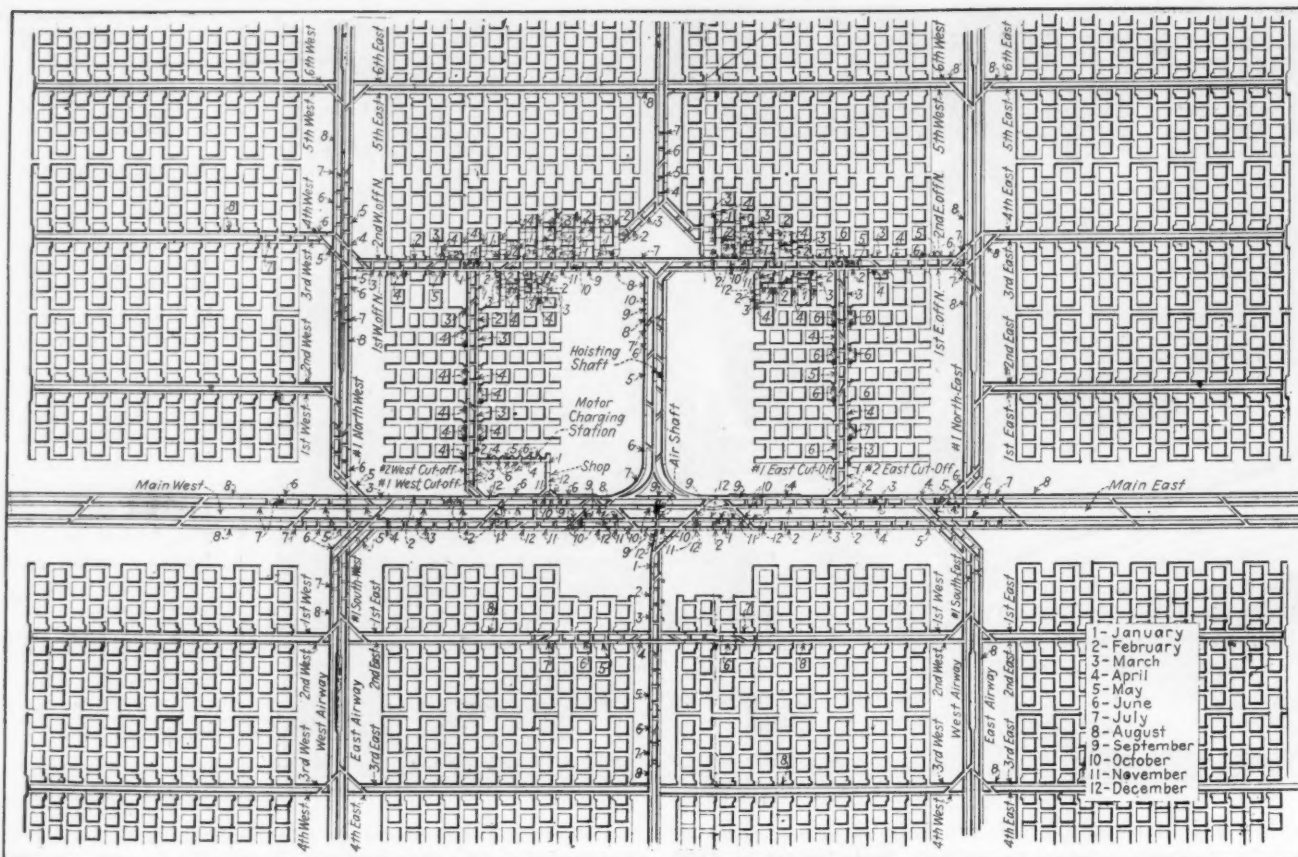
Power for the mine is received at a potential of 33,000-volts in an outdoor station containing three 667-kva. transformers, protected by aluminum-cell lightning arresters. These step down the current to 2,300 volts, which is the working pressure for the larger motors on the surface and in the mine. The power for small motors and light is stepped down to 220 volts.

Power for underground use is taken in three single lead-covered conductors to a distributing board at the

Bank at Valier

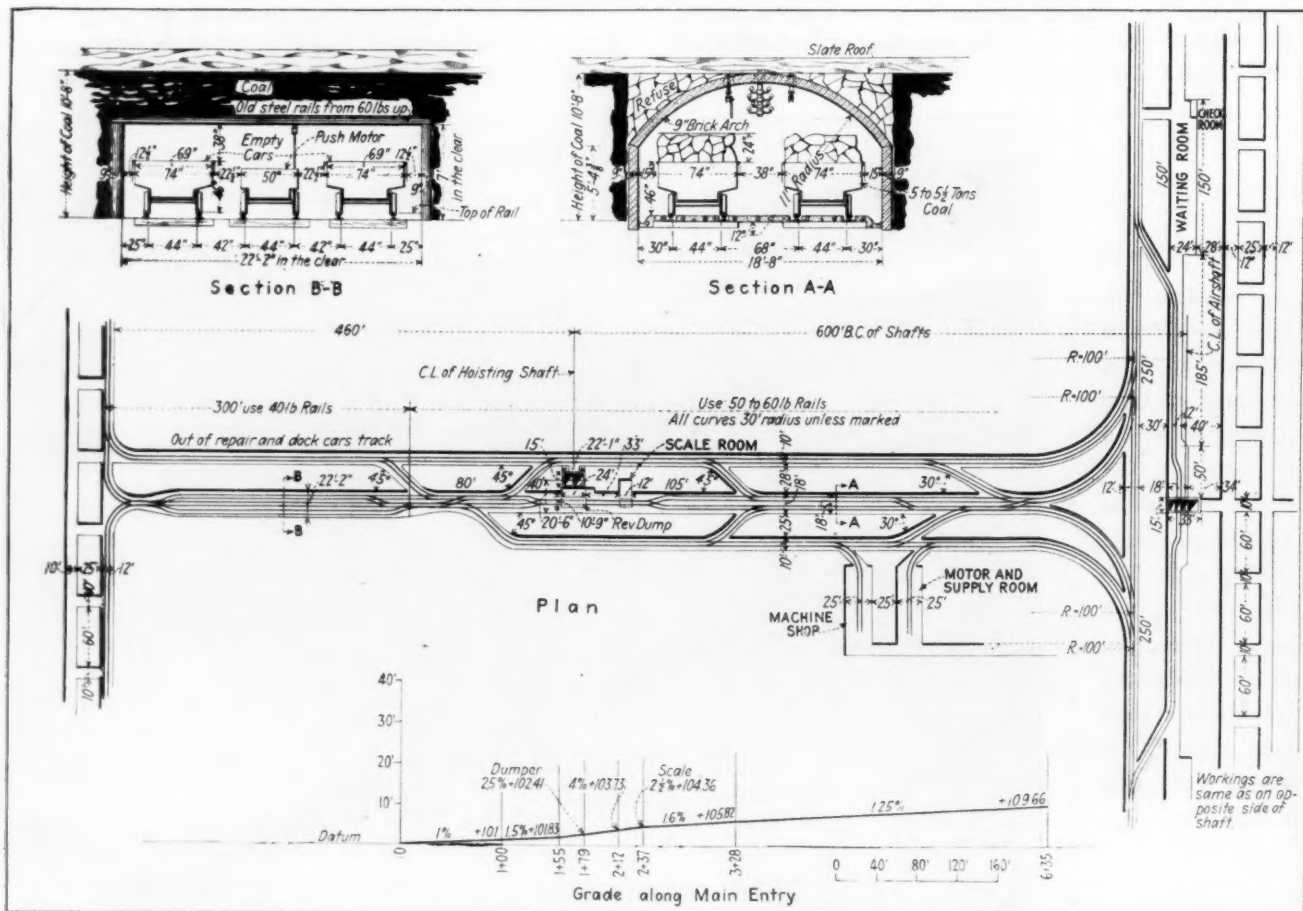
No mining village should be without a bank, not only to take in savings but as a symbol of thrift. Valier has a well-appointed institution. The depositor in the exact center of the illustration is no other than Carl Scholz, the author of this article.





PROGRESS MAP OF THE UNDERGROUND WORKINGS OF THE VALIER MINE

An attempt is here made to conserve the coal by withdrawing only 40 per cent on first mining. The rooms are 25 ft. wide and the pillars 60 ft. square, but the frequency and width of the crosscuts bring the extraction proportion up to the percentage mentioned, which is still large where over 620 ft. of cover has to be sustained, as Mr. Scholz would doubtless agree.



PLAN AND CROSS SECTIONS OF THE LANDING SHOWING WAITING ROOM, CHECK ROOM AND MACHINE SHOP

bottom of the shaft, and thence through armored cables buried in trenches it is distributed to the various substations or motor generators. Near the shaft bottom is a charging station for locomotive batteries where direct current is obtained from a 300-kva. motor-generator set that feeds into the trolleys. As the mine grows it is intended to put one motor-generator set in each quarter of the operation and feed direct current into the trolley lines at these points, thus obviating long feed wires.

CUTTERS OPERATED BY ALTERNATING CURRENT

The mining machines are operated by alternating-current motors drawing their energy supply from substations, each consisting of three 25-kva. transformers and located on each panel. This system of distribution insures against drop in voltage and prevents accidents that might be involved in maintaining overhead conductors. During the early development period armored lead-covered cables may be somewhat more costly than would be the relatively unprotected direct-current wiring which would serve the same purpose, but with a mine of large extraction the increased cost of heavy wires or the drop in voltage, with its attendant troubles to direct-current motors, will in the end many times outweigh the apparent greater cost in the early stages. The best indication of this is that in this mine with a production of 600,000 tons of coal only one mining machine motor to date has needed any repairs.

The mine is equipped with 300 5½-ton cars fitted with roller-bearing wheels. The cars are built wide and low so as to require the least effort in loading. They are equipped with a one-spring draw bar. The motive power is supplied by locomotives which can be operated either by storage battery or trolley. Each of these has 100 A-8 Edison cells. This arrangement has proved quite satisfactory. When traveling on entries 250-volt current is drawn from the overhead trolley and the machines have a speed of five miles per hour. When going into the room on the battery the speed is automatically reduced to 3½ miles per hour. The combination feature makes it possible to reduce the battery capacity to a minimum.

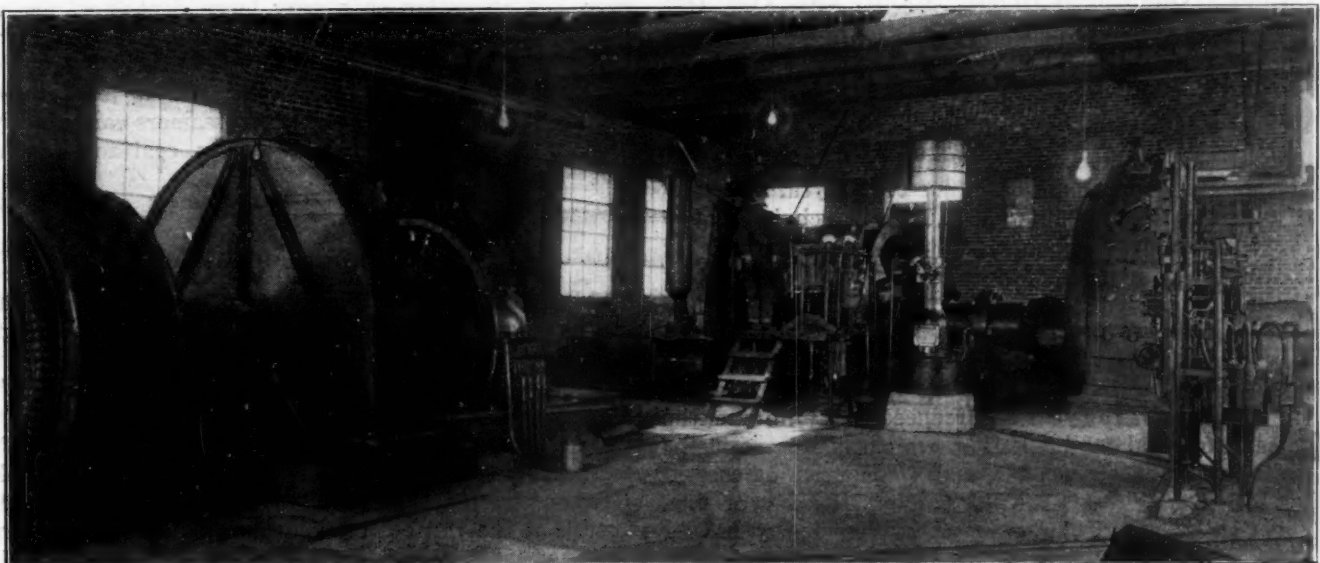
For hauling on the main roads 15-ton locomotives

are used. On the main entries the roadways are laid with a gage of 44 in., the rail weighing 56 lb. per yard and resting on standard wood ties. Thirty-pound rails on steel ties are employed on panel entries and in rooms. The tracks in the rooms are laid with four ties to a 30-ft. rail. The main-road track is bonded with copper bonds electrically welded.

The undercutting equipment consists of shortwall machines with 7-ft. cutter bars. In part the rapid development of this mine has been due to the use of two entry-driving machines that undercut, break down and load coal in one operation. In many instances 50 to 60 ft. of entry were driven with one machine in 24 hours. This feature was of special importance in the early stages of development, for it eliminated explosives, not only reducing the risk of gas explosion but also avoiding injury to the roof and ribs. On account of the overlying slate, which rapidly disintegrates when exposed to the atmosphere, it is important to leave some top coal in place, and for this the entry-driving machines can be made to provide. An inspection of the mine after two years of operation will convince anyone of the advantage secured by the shearing of the ribs and the elimination of blasting. Throughout the installation every precaution has been taken to safeguard the mine against explosions of gas and dust. These precautions include the adoption of alternating-current motors and the use of electric safety lamps.

EXPECT TO GET 70 PER CENT OF PANEL COAL

The mine is laid out on the panel system. The shaft bottom, which lies parallel to the railroad tracks, is arched with brick and will have, when completed, a storage capacity on its two tracks of a hundred cars. The empty cars are stored on both sides of the shaft bottom. A four-entry system running east and west divides the mine into two sections. The breakthroughs between the two pairs of entries were made as few in number as possible in order to avoid leakage of air. The butt entries are driven on a three-entry plan, with a roadway in the center and air returns on each side. The panel entries contain fifteen 25-ft. rooms driven on 85 ft. centers. Breakthroughs are driven 50 ft. apart, thus leaving the pillars 60 ft. square. Each panel is



MAIN-SHAFT HOIST AND FLYWHEEL MOTOR-GENERATOR SET AT THE VALIER MINE

This hoist under test has raised 1,958 tons in the space of one hour. In the illustration will be noted: Switchboard and hoisting motor on the right, automatic brake control to the left of the engineer, the hoisting drum being behind him; on the extreme left the flywheel motor-generator set.

separated from the other by a 25-ft. pillar. By this method about 40 per cent of the coal is recovered as the workings advance, and it is expected that it will be possible to draw all the room pillars, thus securing an extraction of about 70 per cent from the panels. The exact method of extracting these pillars has, as yet, not been determined.

The coal company has laid off 120 acres adjoining the town of Valier into town lots, and built 25 miners' houses of ten different designs, ranging from three to six rooms. These are being sold to employees at cost. It is the policy of the company not to own or operate any stores and it encourages all its employees to own their own homes. Over two hundred houses have been built by outside interests and a considerable civic spirit is manifested by all the inhabitants. The town is lighted by electricity, and sidewalks, sewers and water supply are now being installed. The various designs of houses, including both frame and stucco construction, present an appearance not usually found in mining communities. The business section contains a number of attractive and well-stocked mercantile shops, and a bank that compares well with the financial institutions of larger municipalities.

MAKE RAPID GROWTH IN RECORD TONNAGES

About six hundred men are now daily employed at this mine and up to the first of April few idle days were experienced at this plant. It is because of the unceasing efforts and loyalty of all those connected with the company that this property has been developed so rapidly, with few minor injuries and no fatal accidents during the first thirty months of its existence. The increase in tonnage is perhaps best appreciated by noting the tonnages and dates set forth in the following tables:

Tonnage	Date When First Hoisted	Tonnage	Date When First Hoisted
500.....	Nov. 22, 1918	2,500.....	Oct. 28, 1919
1,000.....	Feb. 24, 1919	3,000.....	Jan. 29, 1920
1,500.....	May 27, 1919	3,500.....	May 1, 1920
2,000.....	Oct. 11, 1919	First coal hoisted May 10, 1918	

Coal Mining in Australia Shows Promise of Expansion

Output in Queensland Almost Normal Last Year Despite Shipping Strike—Extensive New Areas Being Developed at Bowen

COAL-MINING in Queensland, Australia, has of late shown signs of expansion, and there are indications that in this and succeeding years the output will be considerably increased. The value of last year's production was over £614,000 (\$3,070,000), which is £42,000 (\$210,000) more than that for the preceding year. It is true that the increase is in value only, the quantity produced being 931,630 tons as against 983,193 tons in 1918. Doubtless production would have been considerably larger had it not been for a strike which hung up nearly all the shipping on the Australian coast for eight months of the year and reduced to a minimum the demand for coal for bunkering, which at present is the main outlet for Queensland coal. The price of coal at the pit's mouth was 13s. 2.2d. per ton, the cost of this, like that of practically every other commodity having "gone up" during the year, the increase being 1s. 6d. per ton.

While Queensland has extensive coal measures widely separated over its vast territory, until a few years ago scarcely any was produced except at Ipswich, twenty-

four miles from the capital, Brisbane, in the southern part of the state. While that district will remain the chief source of supply, measures in other parts of the state are now being exploited with more or less success. These localities include (besides Ipswich) the Howard field, a short distance to the north; Blair Athol, in the Central district; the Styx River, to the north of Rockhampton, some four hundred miles north of Brisbane; the Bowen coal field, over sixty miles from the port of Bowen, still further north; and Mount Mulligan, in the large mineral district lying inland from Cairns, about a thousand miles north of the capital.

DAWSON RIVER COAL DISAPPOINTS IN QUALITY

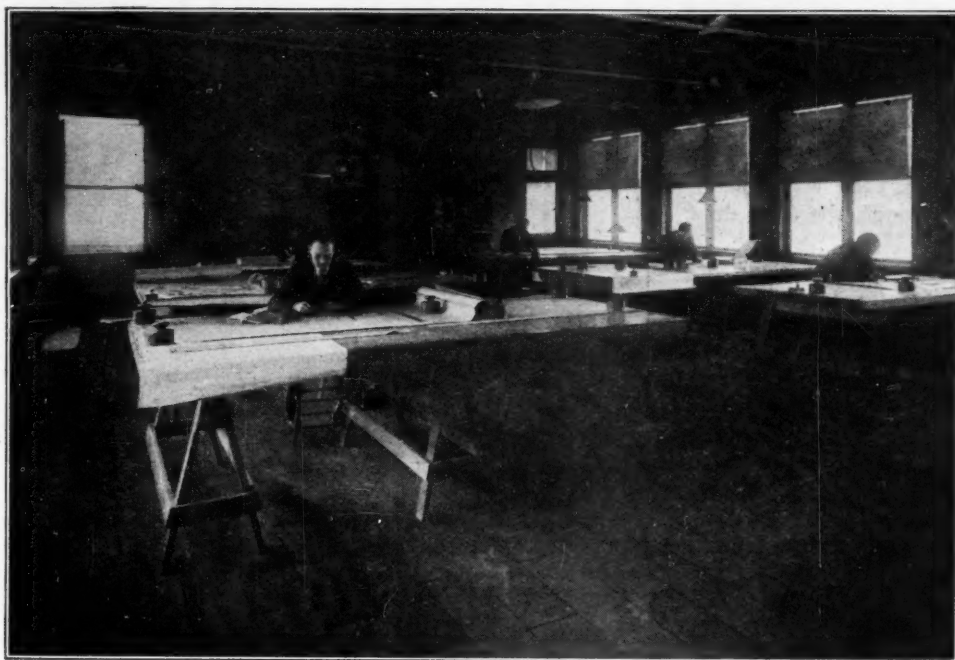
Prospecting operations have been carried out on the Dawson River (inland from Rockhampton), where extensive measures exist, but the coal here has proved disappointing as to quality. The present (Labor) Government, in pursuance of its nationalization policy, has control of the coal operations at the Dawson River, Styx River and Bowen. It also owns a mine at Warra, on the Western Railway near Roma, but this has proved a financial failure and has been closed down.

At the Styx River the only shaft sunk struck good coal, but in such faulted country that work in the shaft last year was stopped. Prospecting by boring, however, has recently located, at a depth of about 700 ft., a seam 8 ft. 8 in. wide of coal apparently of good quality. This is in more settled country than the shaft, and right on the coastal railway which connects the field with Rockhampton and Brisbane, and will eventually connect it with the Northern ports. The distance from Rockhampton is eighty-three miles.

At the Bowen coal field the state is developing first-class and extensive coal areas, and a railway connecting the field with the port of Bowen is under construction. The Government has initiated extensive plans for establishing iron and steel works at Bowen, the chief reason for deciding on this site being the proximity of the Bowen coal. The iron and steel works are to cost something like £3,000,000 (\$15,000,000). Supplies of iron ore for the works are to be drawn mainly, as far as Queensland is concerned, from Cloncurry, over five hundred miles by rail inland. The Government, however, has an option on a very large deposit of ore of better quality on an island in Yampi Sound, on the northwest coast of Western Australia, nearly two thousand miles by water from Bowen; and it is expected, should this island be bought, that steamers carrying the ore to Queensland will take Bowen coal to Western Australia as return loading.

Eye for Eye and Tooth for Tooth

THE United Mine Workers and other labor organizations met in Charleston on June 12 to nominate a third ticket for the election in West Virginia, naming as their candidate S. B. Montgomery, the labor candidate for the Republican nomination for Governor, who was defeated in the recent primary. As showing the temper of the mine workers in West Virginia, C. F. Keeney, president of district 17, in the course of a speech at the third party convention said that a situation had come about which made it necessary to take an eye for an eye and a tooth for a tooth. As miners continue to purchase arms this is taken to mean that what the miners cannot secure by union methods they will attempt to secure by force.



Details of Drafting Room

This room is well lighted and ventilated, the cork floor makes it easy for the men who have to stand on their feet and deadens all sound made by men walking.

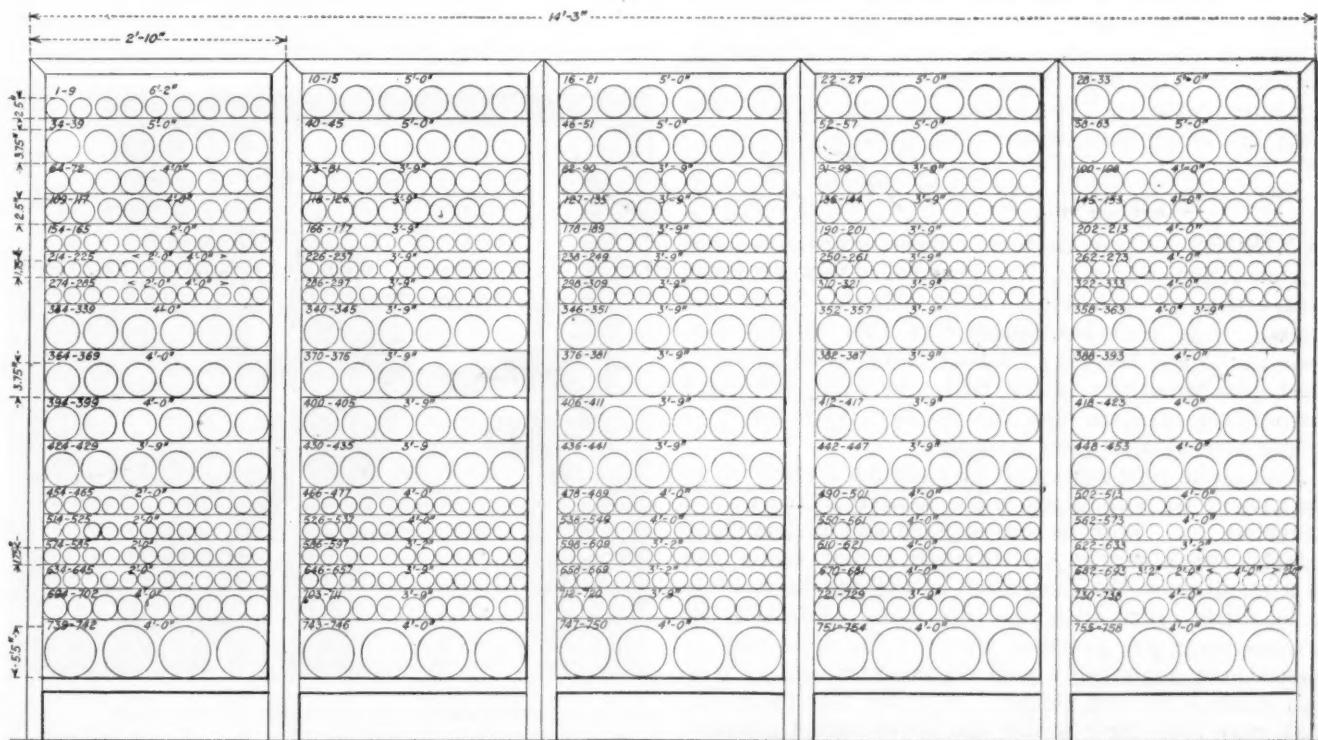
Kingston Coal Co.'s Drafting Room and Map-Filing Vault

Cork Floors Save Fatigue and Reduce Noise — Flap Cover of Map Tubes Is Easily Opened but Proof Against Dust

NOTABLE among the many details of operation to which careful consideration have been given by the Kingston Coal Co., of Kingston, Pa., is the drafting room together with its vault and map-filing system. As will be noticed in the accompanying illustration, the drafting room is large, light and airy. Plenty of space is provided for the six tables now in use. In fact,

should the necessity arise, there is sufficient room without overcrowding to install in all ten tables.

A row of four double windows extends down each side of the room, while one large window is placed at either end. Steam heat keeps the room at a comfortable temperature during the winter, while electric fans in summer tend to alleviate excessive heat. For night work sufficient artificial light is provided by means of adjustable drop lamps. As will be noted in the illustration, the floor is covered with large blocks of cork, thus relieving the strain on the draftsmen, who, being compelled to be on their feet throughout the day, naturally find the work tiring. The cork floor also deadens the noise made in moving about.



ARRANGEMENT OF MAPS IN FILING CASE CONTAINED IN THE VAULT

The offices of the Kingston Coal Co. are located near the station of the Delaware, Lackawanna & Western R.R. in the City of Kingston, and as a result dust and cinders enter the building in quantity. Dust settles over everything, tending to ruin or destroy the maps and drawings. Some method had to be devised to protect these records, for even when they were placed in the vault the dust would come through the open door and settle on them.

The vault itself is of the ordinary type of construction and is about 15 ft. square. It affords more than sufficient room for the accommodation of all the drawings up to date and it provides ample space for those which may have to be filed in the future. At present the filing case contains space for 758 individual drawings, provided only one drawing is filed in each compartment. This filing case is about 5 ft. high and 14 ft. 3 in. long and is built along the rear of the vault. Two-inch angle iron is used in the construction of the filing case. Six vertical bars divide this case into five equal divisions. Horizontal cross bars of $\frac{1}{2}$ -in. round iron are used to support the individual compartments.

Round tin tubes of various sizes and lengths are used as individual drawing containers. The opening of the tubes is made on a slant and is so arranged that the flap cover, which also is of tin, will always stay closed unless it is purposely held open. These flaps are made as nearly airtight as possible and thus the dust is prevented from entering the tubes and destroying the maps. Tubes of four different diameters as well as of six different lengths are provided, giving the following combinations of sizes:

Number	Diameter	Length	Number	Diameter	Length
81	2.5 in.	3 ft. 9 in.	55	5.5 in.	4 ft.
172	1.75 in.	4 ft.	54	3.75 in.	5 ft.
120	1.75 in.	3 ft. 9 in.	39	3.75 in.	4 ft.
53	1.75 in.	3 ft. 9 in.	81	3.75 in.	3 ft. 9 in.
75	1.75 in.	2 ft.	9	2.5 in.	6 ft. 2 in.
			54	2.5 in.	4 ft.

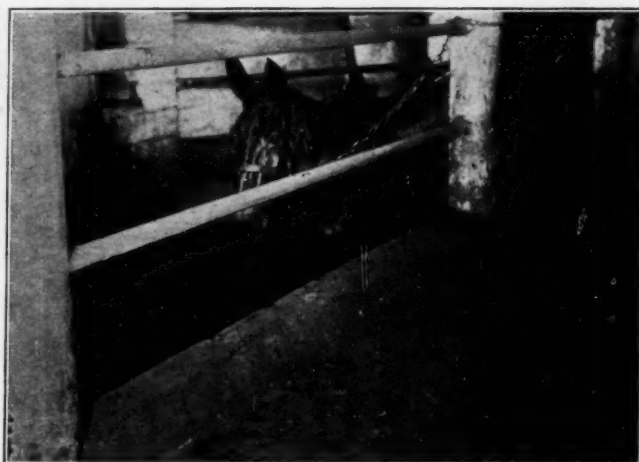
The above combinations can be varied to suit the conditions at the mine; the number of any size employed can be increased or decreased at will. Many other changes can be made to suit any conditions that arise.

Each of the tubes has a flat metal lug fastened to the bottom at the point where the horizontal rods come in contact with it. These lugs are used to hold the tubes in their proper place in the rack.

Now Even Mules Have Wash Houses

ANIMALS as well as men require proper working conditions and care. When compelled to work under unfavorable circumstances their efficiency soon decreases while with inadequate care they quickly lose their health and become a liability rather than an asset. Most coal companies realize that they must safeguard the welfare of their men but comparatively few give proper attention to their animals.

Among the companies that give adequate attention to the care of their livestock is the Kingston Coal Co., of Kingston, Pa. Both on the surface and underground a mule's work carries him through muddy places and as a result upon the completion of the day he is liable to be fairly caked with mud and dirt. Ordinarily no arrangements are provided whereby the mule may be cleaned and accordingly mud accumulates and in time may cause sores and disease. In order that these animals may keep their health the above-named company has provided wash houses for them both on the surface and underground.



MINE MULE BATH UNDERGROUND

All the mud and dust of a day's hard run is removed. The mule enjoys to bathe his feet and sides after his work is done as much as did our sandaled forbears to cleanse their feet after a long walk over a dusty road. A good bath is as great an essential for the mule as for his master.

Above ground the mule wash house consists of a brick building containing a concrete pit filled with water. The ends are sloped permitting the mules to enter, walk through and pass out. Sufficient time is allowed in the bath to remove all the day's filth. Underground the same sort of arrangements are made. The wash house is located near the stable so that the mules may be washed just before entering it for the night.

At first it was difficult to persuade the mules to use the wash houses, but as soon as they became accustomed to their regular ablution it was almost impossible to lead them past the wash houses as they wanted their bath and objected strenuously when it was denied them.

Underground not only are the mules bathed, but a further pleasure is provided for them. At the farther end of the stable a large space or kind of overgrown box stall is placed. This is big enough so that one or two mules can be turned in at one time. Soil has been brought from the surface and placed on the bottom of this stall giving a soft dirt floor.



MINE MULE WASHHOUSE ON SURFACE

A walkway along the side makes it easy to keep the mule in control when he shows too great a desire to continue his ablutions and to prevent his fellow mules from enjoying their share of the good things of life.

Six Tons of Ferric Hydrate Secured Daily From Water at a Connellsville Mine*

By Treating Mine Water with Finely Ground Lime, Ferric Hydrate Is Obtained for Use in the Desulphurization of Gas and as a Pigment for Paint — The Purified Water Is Used for Quenching Coke

BY L. D. TRACY†
Pittsburgh, Pa.

ON AUG. 5 AND 6, 1918, and on March 26, 1919, I made an investigation of the mine-water neutralizing plant at the Calumet mine of the H. C. Frick Coke Co. This plant was built with the idea of developing a process for treating the mine water and making it suitable for use at the company's power plants and coke ovens. At the same time it was hoped that it would eventually be possible to produce a byproduct of such commercial value that it would place the plant on a self-sustaining basis.

The Calumet mine is situated in Mt. Pleasant Township, Westmoreland County, Pa., on a spur from the southwest branch of the Pittsburgh division of the Pennsylvania R.R. It is about six miles southeast of Greensburg, the county seat of Westmoreland County.

The coal, which is of the Pittsburgh or Connellsville bed, lies at a depth of about 200 ft. and is brought to the surface by means of a shaft. The annual coal output of the mine averages 200,000 tons, all of which is made into coke, either at the mine or at byproduct ovens. Two hundred and sixty coke ovens are installed at the mine.

WATER IN STREAMS NOW HIGHLY ACIDULOUS

The continued development of the coal fields of Pennsylvania and the increased use of electric power in the operation of the mines have brought the problem of an increased water supply for the plants to the attention of the coal operators. This is especially true in the Connellsville region, where large quantities of water are used in quenching coke at the ovens. Many of the streams receive the drainage from the mines; and as this water is highly acidulous and contains sulphur in various forms, some method of treatment is necessary to render it suitable for use.

With this end in view, the H. C. Frick Coke Co. about four years ago installed at its Calumet mine a plant for experimental purposes, in an endeavor to develop a process that would provide a maximum amount of suitable water at a minimum cost. From a purely technical point of view the result of these

experiments has been encouraging. The company is now endeavoring to place the plant on a commercial basis.

Calumet mine is drained by three boreholes 8 or 10 in. in diameter and 215 ft. deep, situated possibly 500 ft. from the main shaft. At the foot of the boreholes

are four wood-lined pumps. These consist of one 25 x 14 x 36-in. Lafayette, one 25 x 12 x 30-in., and two 20 x 12 x 36-in. Yough pumps. They deliver to the neutralizing plant an average of 1,000,000 gal. of mine water every twenty-four hours. An analysis of a sample of mine water as it comes from the boreholes and before it has received any chemical

Water is pumped from the mine through a borehole into one compartment of a settling tower. Thence it overflows to another compartment in the same tower and passes to another tower, where the aforementioned skimming of the top is repeated. It is then mixed with powdered lime and passed through an aerating flume which gives the liquid an undulating motion. The precipitate is collected in a thickener and dried on a steam drum.

treatment is given in Table I, which follows.

TABLE I. ANALYSIS OF MINE WATER AT CALUMET PLANT

	Grains per U. S. Gallon	Pounds per 1,000 Gal.
Non-incrusting solids:		
Sodium carbonate (Na_2CO_3)	None	None
Sodium sulphate (Na_2SO_4)	8.5	1.2
Sodium chloride (NaCl)	0.9	0.1
Sodium nitrate (NaNO_3)	None	None
Incrusting solids:		
Silica (SiO_2)	3.8	0.5
Ferric oxide plus alumina ($\text{Fe}_2\text{O}_3 + \text{Al}_2\text{O}_3$)	26.6	3.8
Ferrous sulphate (FeSO_4)	5.5	0.8
Ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$)	59.3	8.2
Calcium sulphate (CaSO_4)	46.6	6.7
Magnesium sulphate (MgSO_4)	8.3	1.2
Free sulphuric acid (free H_2SO_4)	21.3	3.0
Total sulphuric trioxide as sulphuric acid (SO_3 as H_2SO_4)	165.7	22.3
Suspended matter	14.8	2.1

Two of the boreholes are located on the opposite side of the railroad track from the main plant. Over each of these concrete towers about eighteen feet high have been erected. Each tower is divided into two compartments, one of which acts as a standpipe into which the water is pumped from the mine below. When the water in this compartment reaches the top of the division wall, it overflows into the other compartment, from the bottom of which a drain leads to a tower between the two boreholes.

This tower is similar in arrangement to those erected over the boreholes, the water filling one compartment and overflowing into the second. From the effluent chamber a covered concrete drain leads under the tracks and terminates in the mixing chamber of the plant. The entire arrangement is somewhat similar to an inverted siphon. The towers and drain are shown in

*Abstract of an article, published by permission of the U. S. Bureau of Mines, to be presented before the Lake Superior meeting of the American Institute of Mining and Metallurgical Engineers, August, 1920, and entitled by the author "Mine-Water Neutralizing Plant at Calumet Mine."

†Coal mining engineer, U. S. Bureau of Mines.

Fig. 1, while the general arrangement of the installation is shown in Fig. 2. The plant is in continuous operation twenty-four hours per day; the average operating force, in addition to the superintendent, consists of eleven men.

The only material used in the process that is not furnished by the raw mine water is limestone. This is shipped in hopper cars direct from the quarries to the plant and delivered at the outside of the storage shed in the form of screenings that will pass through a $\frac{1}{2}$ -in. mesh. The amount of limestone used per day depends largely on the amount of free acid in the water. It is estimated that for every ton of ferric oxide $\frac{1}{2}$ ton of limestone is needed.

These limestone screenings are raised by means of a bucket conveyor to a storage bin having a capacity of from 80 to 100 tons. From that point they gravitate to a Lehigh-Fuller pulverizer, that crushes the material so that it will pass through a 200-mesh screen. From the pulverizer another conveyor carries the limestone to a bin, from which it drops into a screw conveyor, which feeds it to a vertically-inclined conveyor. This conveyor delivers to the mixing tank and drops the material into the raw mine water as it comes from the boreholes. By increasing or decreasing the speed of the electric motor driving the screw conveyor the amount of powdered limestone used is varied in accordance with the quantity of sulphuric acid in the water used.

INVERTED SIPHONS DELIVER WATER TO MIXING TANK

The water from the boreholes is delivered to the mixing tank by means of the inverted siphon arrangement already described. As the water enters the mixing tank the powdered limestone drops into it from the conveyor and is thoroughly mixed as the water passes over and under a series of baffles.

In general, the reactions of the limestone on the mine water are as follows: The powdered limestone (CaCO_3) neutralize the free sulphuric acid (H_2SO_4) present in the water, forming calcium sulphate (CaSO_4), water (H_2O), and carbon dioxide (CO_2). The basic ferric sulphate is more or less thrown out of solution, for it can only be so held while the water continues acid. If the free acid is just neutralized the precipitation is an almost true basic ferric sulphate.

After the free sulphuric acid is neutralized, if an excess of calcium carbonate (CaCO_3) is used, the ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$) is further acted upon, the results of this reaction being ferric hydrate ($\text{Fe}(\text{OH})_3$) and calcium sulphate (CaSO_4). The calcium sulphate produced is held in solution and so does not get into the precipitate in quantities sufficient to injure it. The resulting precipitate is known as hydrated oxide of iron, and the substance is the byproduct which the plant is designed to produce.

Leading from the mixing tank to a Dorr thickener is a wooden flume, which is one of the essential parts of the entire process and the design of which is covered by patents. This flume is about 200 ft. in length and is carried on bents about 8 or 10 ft. high which are spaced approximately 10 ft. apart. The flume is composed of two wooden troughs, side by side, each trough being 3 ft. wide and 2 ft. deep. Baffles 2 $\frac{1}{2}$ ft. apart alternately project from the bottom and the top. They impart to the current an undulating motion, which completes the mixing of the limestone and mine water commenced in the mixing tank. At the same time

the motion thoroughly aerates the entire mixture. An arrangement is provided by which any of the pulverized limestone settling in the bottom of the flume may be flushed into a separate tank, and the water drained. Table II gives an analysis of the treated lime water.

TABLE II. ANALYSIS OF THE LIME WATER AFTER TREATMENT

	Grains per U. S. Gal.	Pounds per 1,000 Gal.
Non-incrusting solids:		
Sodium carbonate (Na_2CO_3)	None	None
Sodium sulphate (Na_2SO_4)	11.6	1.7
Sodium chloride (NaCl)	0.9	0.1
Sodium nitrate (NaNO_3)	None	None
Incrusting solids:		
Silica (SiO_2)	15.5	2.2
Ferric oxide plus alumina ($\text{Fe}_2\text{O}_3 + \text{Al}_2\text{O}_3$)	56.6	8.1
Ferrous sulphate (FeSO_4)	8.5	1.2
Ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$)	None	None
Calcium sulphate (CaSO_4)	131.2	18.8
Magnesium sulphate (MgSO_4)	17.4	2.5
Free sulphuric acid (free H_2SO_4)	0.5	0.1
Total sulphur trioxide as sulphuric acid (SO_3 as H_2SO_4)	172.6	24.7
Suspended matter	100.3	14.3
Suspended matter:		Per Cent
Silica (SiO_2)		7.6
Alumina (Al_2O_3)		4.6
Ferric oxide (Fe_2O_3)		41.3
Calcium oxide (CaO)		7.0
Magnesium oxide (MgO)		Trace
Sulphur trioxide (SO_3)		19.1
Water (H_2O)		12.4

The flume previously mentioned is built on a 1.5-per cent. grade from the mixing tank and terminates at the center of a Dorr thickener, 7 ft. deep at the outer edge and 12 ft. in the center. When the flume reaches the center of the thickener, it turns vertically downward so that the point of discharge is sufficiently below the surface to prevent agitation of the clarified water.

With a flow through the thickener of 1,000,000 gal. every 24 hr., its capacity allows a settling period of about 4 hr. During this time the ferric oxide held in suspension settles to the bottom, while the clarified water passes over the upper edges into collecting troughs, which carry it to a storage basin. From this basin the water is used if required.

A vertical shaft through the center of the thickener is driven by a worm gear connected to an electric motor. Fastened to the lower end of the shaft are four arms placed at right angles to each other; two are 35 ft. and the other two 16 $\frac{1}{2}$ ft. long. These arms are parallel to the bottom of the thickener. On the lower side of each arm and running diagonally across it are riveted small steel angles that practically touch the bottom. These scrapers, as they are called, serve to concentrate the settled material at the center of the thickener. The arms revolve at a speed of one revolution every five minutes.

SLUDGE IS SPRAYED ONTO HEATED DRUM

A short distance from the Dorr thickener is a building known as the "drying shed." A small diaphragm pump here installed and connected to the underflow of the Dorr thickener is used to draw the ferric oxide, or "sludge," from the thickener and discharge it into a sump. From this sump a centrifugal pump lifts the sludge to an elevated tank outside of the drying shed, where it receives a further period of settling. At this stage of the process the sludge contains about 75 per cent of water and has the consistency of thick paint.

In the drying shed is a large dryer in the shape of a drum and manufactured by the F. J. Stokes Machine Co., of Philadelphia, Pa. This is heated by steam at a pressure of 30 lb. Just underneath the drum and parallel to its axis are two troughs, one of which is

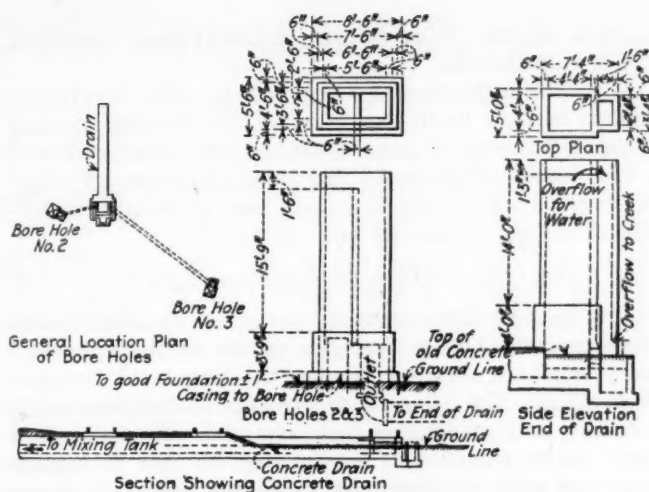


FIG. 1. PLAN OF CONCRETE SETTLING TOWERS AND DRAIN FOR CRUDE MINE WATER

Both the towers over the boreholes and the central tower are two-compartment affairs. By means of these towers the water is twice decanted, only the liquids and finest of solids being carried over. The left hand sectional elevation shows a borehole tower and that of the right hand the central tower, which is so designed that it will pass no more water to the plant than it can handle. The rest overflows to the creek.

connected by a line of pipe to the elevated secondary settling tank. At intervals of about twenty minutes a valve in this pipe line is opened and the trough filled. The sludge from this trough gravitates to a small centrifugal pump a few feet in front of the drier. This pump sends the sludge into the second trough with sufficient force to splash it against the hot outside surface of the drum. The water is evaporated by the heat as the drum slowly revolves, leaving the residue in the form of a fine powder, which is scraped from the drum by a long knife-edged steel bar. This powder is yellow in color and is conveyed by a mechanical loader to storage piles on the floor or into cars for shipment.

The plant, even at present, is of an experimental nature. Since the original installation the company has

TABLE III. ANALYSIS OF THE FERRIC OXIDE PRODUCT

	Moisture Free Per Cent
Silica (SiO_2)	13.0
Titanium oxide (TiO_2)	0.3
Aluminum oxide (Al_2O_3)	10.3
Phosphorus pentoxide (P_2O_5)	1.0
Ferric oxide (Fe_2O_3)	37.1
Calcium oxide (CaO)	13.2
Magnesium oxide (MgO)	0.6
Potassium oxide (K_2O)	1.0
Sodium oxide (Na_2O)	0.7
Sulphur trioxide (SO_3)	11.6
Combined water (H_2O) above 105 deg. C.	4.8
Carbon dioxide (CO_2)	6.4
Total	100.0

made many alterations in the mechanical details and operation tending toward greater economy and efficiency, although the fundamental process remains the same. The most important change was the elevation of the mixing tank and flume, whereby a gravity flow to the Dorr thickener was obtained, at the same time placing the additional head necessary upon the pumps in the mines.

IMPROVEMENTS OBVIATE ACID'S EFFECTS

In the first design these pumps forced the water to the surface, where it flowed by gravity through the mixing tank and the flume to a sump at the base of the Dorr thickener, being raised from this sump into the thickener by a small centrifugal pump. If for any reason the conveyor feeding the pulverized limestone into the raw mine water ceased to operate, more or less of the untreated water found its way to this pump, with the result that the acid in the water rapidly attacked it and rendered it useless. To avoid this condition the concrete towers at the boreholes were constructed, the mixing tank and flume were elevated, and the work done by the small centrifugal pump was placed on the machines in the mine. As these pumps are wood-lined, the injurious effect of the mine water is reduced to a minimum.

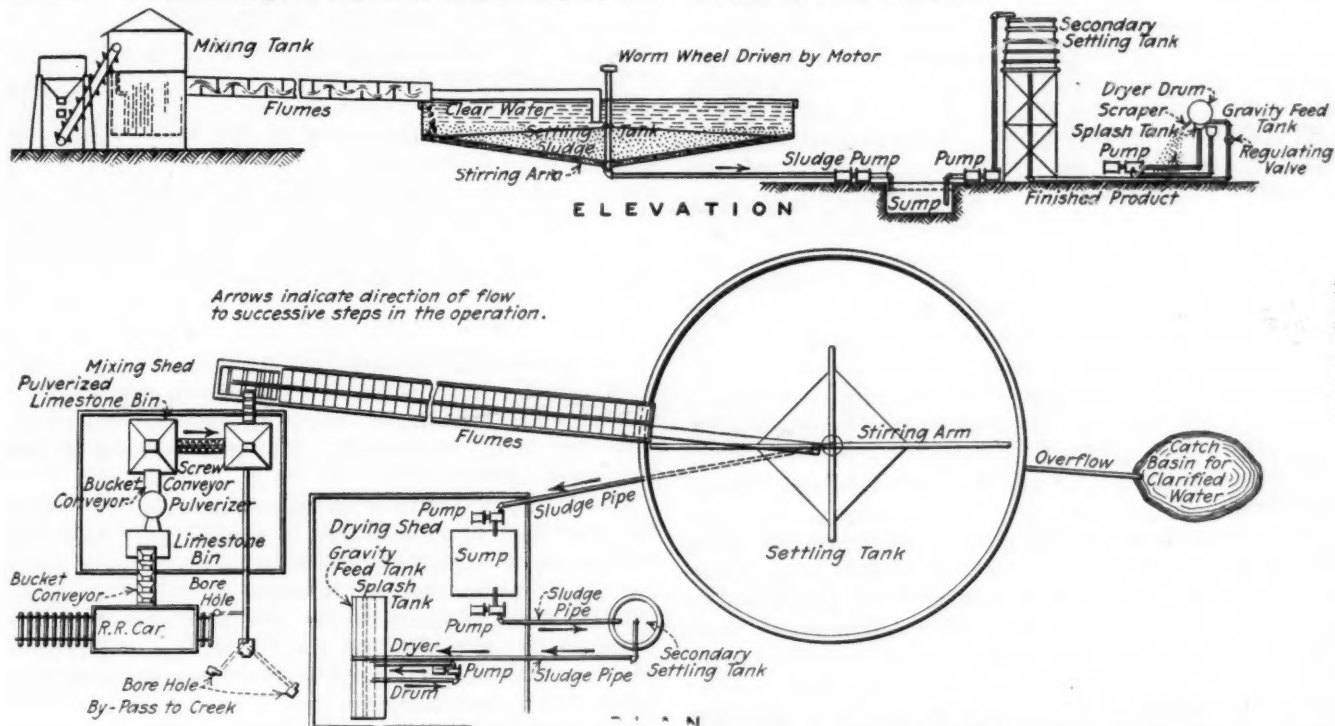


FIG. 2. PLAN AND DIAGRAMMATIC ELEVATION OF THE WATER-NEUTRALIZATION PLANT

The limestone—the only material in the process not furnished by the raw mine water—comes in on the railroad and the water by the way of the boreholes.

By distinct routes they reach the mixing tank and go together

to the settling tank or thickener, where the clarified water is passed to a catch basin, and the ferric hydrate sludge, after a secondary settling, is sprayed on a steam drum. Thus dried the product is stored or shipped.

The principal byproduct of the neutralizing plant is the ferric oxide extracted from the mine water. As has been stated, many of the streams in this region contain a large amount of sulphur water, which if used for quenching coke at the ovens would undoubtedly discolor the product and increase its sulphur content, which, it is well known, must be kept as low as possible if the coke is to be used for blast-furnace purposes. The treatment described has the further possibility that with additional treatment, the water coming from the plant could be made suitable for use in steam boilers.

During extremely dry seasons, such for instance as the summer of 1918, the treated water from the Calumet plant has been of material assistance. By using it for quenching coke the company was able to conserve the fresh water stored in its reservoirs and employ it solely for domestic and power purposes. Even before the Calumet plant was constructed the mine water had been treated in a crude way, whenever it was necessary to use it for quenching coke.

The advantage that a plant such as that at Calumet may hold over a water-treating plant of the usual type lies in the fact that the former produces a byproduct having a potential commercial worth, while the sludge from the latter has, as far as I have been able to ascertain, little if any value. If this byproduct can be secured at a sufficiently low cost to meet competition from outside sources and the plant can be made to produce a revenue sufficient to pay the operating cost, the company will obtain an additional supply of water at little extra expense.

PRODUCT HAD A GOOD MARKET DURING WAR

The plant at present is turning out six tons of ferric oxide per day. The amount of this byproduct depends entirely on the quantity of water pumped from the mine and the percentages of iron, in various forms, contained therein. During the war, when the importation of natural ferric oxide was impossible, a ready market was found for the manufactured article. Large shipments of this byproduct were made to companies manufacturing artificial gas, for use in removing the hydrogen sulphide present therein. The problem now presenting itself is to so perfect the operation of the neutralizing plant that, if possible, competition from European and domestic ferric oxide and iron borings can be successfully met.

Ferric oxide also is one of the chief ingredients in a number of the paints commonly used, and it is hoped that further experimentation will demonstrate it to be of considerable value to the agricultural interests of the country. This would furnish an additional market for this byproduct. The Calumet water-neutralizing plant, so far as I know, is the only one of its kind in this country that treats mine water in the manner described.

In connection with experimental work¹ conducted by the Bureau of Mines on the action of acid mine water on the insulation of electric conductors, the chemical laboratory collected and analyzed a number of mine waters. The acidity and composition of the waters from any mine vary considerably at different times. However, the analyses of the samples collected are tabulated here in order to give a general idea of the composition

of such waters. The acidity of the waters tabulated varies considerably.

Mine water purification has been studied heretofore almost entirely with the view of preventing damage to pipes, pumps, and boilers. It has been practiced with a fair degree of success. The principal means of treating impure water used in boilers may be roughly classified as chemical, thermal and mechanical.

NO OTHER METHODS PRODUCE REVENUE

The first of these methods seeks, by so-called boiler compounds, either to free the water of mineral salts by precipitation or to remove the free acid by neutralization. The thermal treatment is, fundamentally, a boiling and condensing process and is commonly used when large amounts of carbonates of lime and magnesia are held in solution in water containing an excess of carbonic acid. By heating the water to the boiling point, the free acid is expelled and the salts precipitated. After sufficient time has elapsed to allow the precipitated salts to settle, the clear water may be pumped into the boiler. The third process is especially applicable to water holding in suspension fine particles of clay, sand or organic matter. The water is first run into large settling tanks, where the suspended matter is allowed to settle, and then put through a filter, which removes light organic material.

Often a combination of these methods has been found advantageous, and for securing a supply of pure water for boilers they have proved more or less satisfactory. The objections to them are that the cost of installing and operating suitable purification plants places an additional burden on the production cost at the mine and none of these plants reclaims any of the valuable elements held in either solution or suspension in the water.

The ideal plant would be one that sufficiently purified the water coming from the mine to permit it to be used for domestic or steam purposes and at the same time produced a byproduct of sufficient commercial value so that the revenue derived from its sale would at least partly pay for the cost of operation and make a return equivalent to the interest on the money invested therein. The Calumet plant is a long step toward such an ideal installation. A degree of purification is attained sufficiently high to allow the water to be used at the coke ovens and, with additional treatment, even in the boilers. At the same time about six tons per day of a marketable byproduct is produced.

FERTILIZER A POSSIBLE BYPRODUCT

The mine water contains some phosphorus and potassium, which might possibly be of value in the fertilization of soils. The water from mines other than from those producing coal could also be utilized as a source of byproduct.

The foregoing shows what may be accomplished when the treatment of mine water is studied with the idea of reclaiming valuable products as well as for obtaining a pure water supply. It would seem that in many cases a plant similar to the one at Calumet might prove to be an economical investment for a company whose surface water supply is in danger of being curtailed during dry weather.

In my opinion mine-water purification is worthy of investigation by any company that has before it the problem of the disposition of its mine drainage and the provision of an adequate water supply.

¹H. H. Clark and L. C. Ilsley: Action of Acid Mine Water on the Insulation of Electric Conductors. U. S. Bureau of Mines Tech. Paper 55 (1913) 26 pp.

The Truth About Coal, and Not By a Coal Operator

Dr. Eaton Says Bituminous Industry Has to Combat
a Public Opinion Made Hostile Because
Uninformed or Misinformed

WRITING on "The Truth About the Coal Situation," in the current issue of *Leslie's Weekly*, Dr. Charles A. Eaton, its associate editor, urges that if the problems facing the soft coal industry were better understood by the public there would be a far different national attitude toward it. Dr. Eaton, who during the war was director of the National Service Section of the U. S. Shipping Board and is regarded as an authority on industrial problems, says that the soft-coal industry has been badly misrepresented before "a hostile and uninformed or misinformed public opinion which is ready to believe anything bad about the coal operators and nothing good." The writer dwells upon the serious shortage of coal cars as one of the difficult problems facing the soft-coal industry. In discussing prices of coal at the mines he says that "the rank and file of operators are not open to the charge of profiteering, nor have they made undue profits even during the war."

The article in part is as follows:

"Next to agriculture coal is the Nation's basic industry. What food is to the body coal is to the economic fabric of society. Along with these two stands transportation, constituting a three-fold foundation for the prosperity, progress and stability of all classes and sections alike.

FORTUNATE IN ESCAPING NATIONAL DISASTER

"The coal industry is of vital importance to every one, but its condition has been, and still is, so chaotic that one wonders how we have managed to get as far as we have without serious national disaster.

"Roughly speaking there are about ten thousand bituminous coal mines and some seven thousand operators in our coal-producing areas. The country needs annually for normal use about five hundred million tons of bituminous coal. The mines now being operated have an annual capacity of 750 million tons."

Dr. Eaton points out that, with an annual value of \$1,300,000,000 for the coal mined, the labor cost of producing it has been \$741,000,000, and that this was increased by \$200,000,000 under the recent wage advance of 27 per cent awarded by the Bituminous Coal Commission. He goes on to say:

"It needs always to be kept in mind that after coal leaves the mine there are the wholesaler and retailer who come in for a profit. And among these are some who do not hesitate to take all that the traffic will stand, but the rank and file of the operators are not open to the charge of profiteering, nor have they made undue profits even during the war.

"According to reports furnished by the National Coal Association, and which I have not seen contradicted, some four hundred operators in 1917 made profits of over 15 per cent upon their capitalization, while 6,600 operators made less than this. In that year the total output was sold for an average price of \$2.26 per ton at the mine. Out of this all operating expenses, fixed charges and taxes had to be paid.

"In 1918 under Government regulation the average price at the mine was \$2.61. According to Dr. Garfield this price left an average margin of only 46c. per ton, and of this 46c., 30c. was paid in Federal taxes.

"In the report of the Bituminous Coal Commission the tax returns to the Treasury of some 1,551 coal-mining concerns are tabulated for 1918. These companies produce about one-third of the total output, and they represent fairly the industry as a whole. In that year 337 of these 1,551 operators reported a loss. After deducting taxes the average per cent net income to invested capital in 1918 for the 1,214 companies reporting profits was less than 11 per cent, and for the entire 1,551 companies it was 9.72 per cent.

"Under our present system of taxation a business must earn at least 10 per cent in order to equal the income upon 4½ per cent government bonds. So that it would seem that these coal companies can hardly be justly accused of undue profiteering.

INDUSTRY IS ONE WITH MANY HAZARDS

"Coal mining is a hazardous calling both for investors and workers. It is a seasonal occupation involving slack times alternating with extensive forced output. There is a continuous car shortage, which means shutting down work sometimes for twenty days out of thirty. Meanwhile in many mines water has to be pumped all the time whether coal is shipped or not. Slate caves in; sulphurous water destroys tools and tracks. Explosions and fires are a constant menace. As mining advances there is a growing depletion of resources and rapid depreciation of equipment.

"In view of these facts it is not surprising to learn that in 1915 the average return upon investment in the mining of bituminous coal was less than 1 per cent, while in 1913-1914 coal companies representing a capitalization of over 100 million dollars were in the hands of receivers.

"The operators have been without any means of reaching public opinion with the facts. And they face a hostile and uninformed or misinformed public opinion, which is ready to believe anything bad about the coal operators, and nothing good. There are certain radical changes necessary in order to place this basic industry upon a safe footing.

"First of all, the mines must have cars when they are needed, and as many as are needed, in order to distribute production over the whole year evenly. We must have a new national attitude toward the coal-mining industry. We must help the coal industry to escape from an intolerable car situation; from an unjust and ignorant public opinion; from autocratic, wasteful and destructive labor policies and practices; from a niggardly credit system; and from a destructive governmental attitude. Then we can have fair oversight and regulation by Government which will tend to make the industry more efficient; reduce costs and lower prices, while at the same time giving employer and employee a generous reward for hard and unpleasant work well done."

Ernest F. Heasley has just been placed in charge of the Huntington office of the Boone Coal Sales Co., that company having only recently opened the branch in Huntington, W. Va.

Masters in One Industry

Mine Managers and Engineers, Plant Regions, Are Pioneers of Civilization
Perplexing Problems in Mechanical,

By R. Dawson Hall

MINE managers and mining engineers are masters, or novices, in many industries. It is frequently stated with much justice that the mining engineer must have a knowledge of all forms of engineering, for most mines are outposts of civilization. They are opened in places where there are few of the conveniences of life, often where there is no resident population, and consequently it is the function of the management to create and sustain the whole community life which must be initiated and developed if mining work is to be performed.

Thus railroads and bridges must be built, roads must be laid out and maintained, houses for individuals and for the community life must be built, stores must be erected, the selling of merchandise conducted, sanitary problems must be solved, schools must be constructed, water must be supplied, and there are countless other activities that fall to the engineer, in many of which byways of mining engineering he may be an adept, but is more likely to be an uninstructed novice.

Busied with his geological determinations, his surveys, his laying out of mines, his opening up of properties and his ventilation difficulties — that is, with the main and proper business of his craft — he has little time for the study of the problems just enunciated, especially as they are “byways from byways,” for there are also his mechanical problems, his boiler houses, engine houses, hoisting equipment, electric transmission systems, compressed-air engines and air lines, pumps, fans, water-purification systems and many other mechanical features. There are his

safety-engineering problems, the guarding of machinery, the avoidance of explosions of gas and dust, the design of the workings for the promotion of safety. Then again there are management and accounting difficulties. One lays down one's pen with a sense that to express all were but to weary all.

* * *

TO keep up, up, up with all these varied problems the engineer would need to take not only *Coal Age* for mining matters but *Power* as his mentor for his boiler and engine problems, the *Electrical World* for his electrical labors, *Safety Engineering* for his work in the interest of safety, *System* for his management and accounting difficulties, *Chemical and Metallurgical Engineering* for his booking in the progress of chemistry in relation to his business, *Engineering News-Record* to help him reach complete competence in civil engineering operations, the *National Builder* to assist him to plan and erect his towns and even one of the many dry-goods papers to aid him in scheming and controlling his stores.

All these papers he would like to peruse and even to subscribe to, but he has not the time. They are not written with a view to his essential problems. His specializing subordinates may and must take some one of them, but for his part he must make mining his main study and seek in some way to meet the others as best he can. Is he a master in these many industries? He most certainly is not; in most he is a novice only and in need of help.

—Novices in Many

ing Their Industry in Undeveloped
—As Such They Have to Solve Many
Civil and Sociological Engineering.

COAL AGE has sought to serve him in these varied lines, but the inertia of the industry somewhat hinders, for there are not a few who still feel that a coal paper should be only a coal paper and nothing more, that it should rigidly restrict its viewpoint to the mines, the mines, always the mines—"the practical problems of mining," as a large and somewhat confident majority still prefers to term them.

But it is the duty of a coal paper to meet all—not merely a few—of the problems of the mining manager, to direct attention and to develop not one phase or a few phases only but all that the modern mining man must meet. The art of mining must be seen whole. The entire industrial duty of the coal man should find balanced expression within its pages. The engineer's journal should light every professional duty that he has to meet. He must not go full illuminated to his mining engineering duties and but dip-lighted to the others.

Hence the Equipment Number and the articles on equipment and hence also the Safety and Welfare Number and the articles on those two subjects. The number of smaller mines which cannot be furnished with specialists on a multitude of subjects and the fact that over all the final arbiter as to equipment and even as to its handling, in large and small mines alike, is the mine manager make it essential that *Coal Age* shall inform him regarding these byway duties as well as about those that form for him the justification of his title — mining engineer.

* * *

THE Bureau of Labor by one of its investigators has come to the conclusion that about 61 per cent of the 750,000 mine employees live in company houses. The estimate, if anything, is rather too

low than too high, as any one acquainted with the industry will agree. For these employee-tenants must be often built not only dwellings but community houses, boarding houses, hotels, Y. M. C. A.'s, hospitals and churches. There must be in these prosperous times garages, sewerage systems and bathhouses. Some are providing even apparatus for communal laundries, collecting garbage, erecting dairies, constructing vegetable storage places and planting truck farms. First-aid equipment, rescue stations, dental clinics, dispensaries and other like provisions have followed. Some have nurses and instructors in hygiene, safety, English and mining. Some provide classes for women in needlework, house management and bookkeeping. Nor should playgrounds and club houses be overlooked. Community work has grown and is growing as the mines have been planted farther and farther from organized villages and have been filled with men who either never knew what community life was or practiced it on a lower scale.

Time was when the leader in industry strove merely to make industry big. Today he seeks also to render it benign. "Larger" has given way to "better." But for a new era we need an informed management. The mine builder must think in more than board measure; he must visualize something other than bolts or shingles. New materials and better methods are at hand. Are we using them? So much for housing. But there are divers other problems. Let those who have their solution send in their contributions to us early. Let the Safety, Welfare and National Safety Congress Number of Oct. 7 lead its predecessors in informative articles. All the contributions accepted will be paid for at regular space rates.

Changes That Experience Has Dictated in Details of Combination Locomotives*

Devices Were Introduced to Prevent an Excessive Rate of Charge During the Gassing Stage, to Make Impossible a Too Complete Discharge of the Batteries and to Avoid the Possibility of Discharging the Batteries into the Trolley Circuit

BY JOHN B. HICKS†
Jenkins, Ky.

IN THE winter of 1915 the Consolidation Coal Co. decided to replace some of the live stock in the mines of its Elkhorn division with gathering locomotives. Up to this time the coal had been gathered by mules and cable-reel locomotives. Following this decision the question naturally arose as to what particular type of gathering locomotive should be purchased in order that the coal might be gathered most efficiently and at the lowest cost for maintenance.

Having the cable-reel locomotive already in service it was decided to purchase two combination trolley and storage-battery machines, so that a comparative test could be made between the several methods of gathering—namely, by mules, by reel locomotives and by combination locomotives.

Two combination machines were delivered and put into service in the summer of 1915. These locomotives were placed in different mines and on the hardest hauls. They replaced four mules and displaced one man in one of the mines and displaced two men in another mine. In the first instance a spike team was used on one of the hauls, which accounts for the displacing of only one man.

These two locomotives were tried out under practical mining conditions, and after several months of satisfactory service it became evident that the storage-battery locomotive would be a permanent part of the mine equipment. In fact the results were so thoroughly satisfactory that ten more combination locomotives were purchased in the late fall of 1915. These were delivered in February, 1916, and put into service at the different mines of the division.

LOCOMOTIVES 6-TON TWO-MOTOR MACHINES

It might be well to describe this locomotive briefly: It has an outside frame, weighs six tons, has two motors; its length over all is about 14 ft.; its width over all is 5 ft.; its height above the rail to the top of the metal covers is 31 in.; the wheel base is 44 in.; the wheels are steel-tired; the track gage is 42 in.; the speed on trolley about 7 miles per hour; the speed

on battery about 4 miles per hour; the draw-bar pull when on trolley is 2,500 lb. and on battery 1,100 lb.

The equipment on the locomotive consists of two 250-volt direct-current motors hung in tandem—these are operated in parallel at all times by current supplied from the trolley or battery circuits—one 56-cell lead battery; a controller and an ampere-hour meter, also a brake of the screw type. The 56-cell lead battery is assembled in six trays as follows: Two trays of fourteen cells each, one tray of ten cells, one tray of eight cells and two trays of five cells each.

The trays containing the fourteen, ten and eight cells are in the large battery compartment which overhangs the front truck. The 5-cell trays occupy two small compartments in

the body of the locomotive opposite the commutator end of the motors, and all battery compartments have suitable asbestos-board covers about 3 in. above the tops of the intercell connectors.

REVERSE CYLINDER GOVERNS SOURCE OF POWER

The controller is so designed that the transfer from the trolley to the battery circuits or vice versa is secured through the operation of the reversing cylinder. This eliminates the transfer switch and simplifies the wiring on the locomotive. A saving in time is thus secured for the operator because he has only to manipulate the reversing cylinder when he desires to substitute trolley current for storage-battery current or vice versa.

In charging from the trolley while working it is necessary to have a fixed resistance (called a boosting resistance) of a predetermined capacity between the trolley circuit and the battery, with a shunt trip breaker in the charging circuit. This may be operated by hand or automatically opened by an auxiliary contact within the ampere-hour meter. Such an arrangement makes it possible to charge the battery when running on the trolley or while the locomotive is standing, as is often the case when it has to wait for loads or empties. The circuit for charging the battery is so wired that the cells in the locomotive can be energized either by the constant-current or constant-voltage method; both systems using the same shunt trip circuit breaker for opening the circuit when the battery is fully charged.

After describing the type of locomotives in use at Jenkins, Ky., the writer relates difficulties which arose. Tight wedging of trays broke jars, their covers and trays also. The sealing compound melted until the heated gases were given an opportunity to escape. Trays became acid-soaked till proper spacing was provided. The boosting resistance and the shunt trip circuit breaker in the charging circuit were wrongly placed, the one being broken and the other neglected. Both were relocated, but motormen still neglected to use the circuit breaker and so an automatic contact within the meter was provided.

*First part of an article entitled "Use of Combination Battery and Trolley Mine Locomotives," read before the Kentucky Mining Institute, at Lexington, Ky., June 4, 1920.

†Assistant Superintendent, Power and Mechanical Department, Consolidation Coal Co.

At this point a contact is made by the meter which opens the trip breaker.

On the first combination locomotives the boosting resistance was wired with a short-circuiting switch that made it possible to cut out a part of the resistance. This did not prove satisfactory and it became necessary to take out this switch because of the injury done to the battery when it was given too high a rate of charge.

The ampere-hour meter is of the locomotive type, 100 amp., scale 200. Contacts are located at zero with two auxiliary contacts, one at the gassing point on the battery-charging circuit and the other at the low discharge for the battery. This meter shows the state of charge or discharge of the battery if kept in step with it; that is, after the equalizing charge has been given.

The meters on the first combination locomotives had the zero contact only. When the indicating hand on the ampere-hour meter returns to zero it signifies that the battery has been fully charged and at this point contact is made within the meter which opens the shunt trip circuit breaker in the charging circuit, thus stopping the charge of the battery.

TROUBLES DURING EXPERIMENTAL PERIOD

It would be misleading to leave the impression that no trouble was experienced with the batteries and the locomotives in this period of development and experimentation. In the first group of locomotives placed in service the battery trays were secured in their compartments by means of wooden wedges, thin ends down. The slight weave of the locomotive caused these wedges to work downward and become tighter than was desired, thereby putting a heavy pressure on the trays. The repairmen would occasionally get the wedges in too tight, driving them down a little too far.

This also caused an undue stress on the trays when the weave occurred in the locomotive as it ran over uneven track. This weave, as above stated, is slight yet it resulted in split trays, cracked jars and covers. The wedges were removed from around the trays in all the locomotives after which the slight weave in the frames no longer caused the splitting of trays or the cracking of jars.

Present specifications require that the tops of the trays be $\frac{1}{4}$ in. below the tops of the jars and the trays so placed in the battery compartments that at the ends they clear the insulators on the sides of the battery compartments at least $\frac{1}{4}$ in. and not more than $\frac{1}{2}$ in. In the direction of motion of the locomotive about $\frac{1}{4}$ in. is allowed between the insulators on the ends of the battery compartments and the side of the trays. With this arrangement the pressure arising from the slight weave of the locomotive cannot be transferred to the trays.

Another difficulty encountered was that the sealing compound became heated unduly and would run down between the cover and wall of the jars, causing the cells to become leaky. This was a highly objectionable feature and injured both the cells and the trays. By watching this feature closely it was found that the sealing compound was being heated by the gases that arose from the battery when it was being given a boosting charge from the trolley. These gases and the heat from the battery were retained in the battery compartments because those compartments were tight and

would not release them. This was corrected by raising the asbestos-board covers over the top of the battery between two and three inches and boring holes through the side frames of the locomotives into the battery compartments. This allowed the heat and gases to escape.

In the first combination locomotive purchased there was only a $\frac{1}{8}$ -in. space between the trays, this being the thickness of the lifting iron. When, by reason of the overfilling of cells or the leaking of the covers, acid got on the top or sides of the trays, it was difficult to neutralize it. This was remedied by making such changes in the battery compartments as would allow vertical spacing strips about $\frac{3}{4}$ in. thick to be put in between the trays. Since these strips have been put in place no trays have become so acid-soaked that it has been necessary to remove them and it has been found that, barring accidents, the trays always last the full life of the battery.

WRONG PLACING OF BOOSTING RESISTANCE

Likewise, in the early locomotives it was found that the boosting resistance was not properly placed, being in a position where it might be easily broken. This has been corrected by placing half of the resistance on the footplate of the locomotive beside the controller, and protecting it from injury by suitable covers.

Another difficulty arose in connection with the shunt trip circuit breaker in the charging circuit of the battery. The locomotives had been in service only a few months when it was discovered that this shunt trip breaker was mounted in an almost inaccessible place. It was necessary for the motorman to get up from his seat in order to reach it. As a result it was neglected, and the high rate of charge was too often continued, to the obvious disadvantage of the battery, long after the gassing point had been reached.

This was partly corrected by mounting the shunt trip breaker within easy reach of the motorman. This change did not entirely relieve the situation because the motorman would frequently be so busy as to forget to open the circuit breaker. The next attempt to overcome this difficulty was to make an agreement with the meter company to arrange a contact within the meter itself that would make and remain in contact up to zero on the full charge of the battery.

From this contact at the gassing point on the ampere-hour meter two leads are brought out of the meter case; one goes directly to the shunt trip circuit breaker in the charging circuit; the other is grounded through a special key snap switch. The repairman at the motor barn keeps the key for these switches.

PROTECTION AGAINST EXCESSIVE DISCHARGE

As the locomotives are taken out of the barn the repairman turns the switch into the "On" position, which grounds the contact in the meter at this point. This causes the shunt trip breaker to open in the charging circuit, thus stopping the high rate of charge from continuing after the gassing point is reached. As the locomotives come into the motor barn at the end of the shift, the repairman turns this special switch into the "Off" position. This opens the ground connection, allowing the battery to become fully charged in the motor barn by the proper charging current. This contact in the ampere-hour meter and the special switch, where used as outlined above, protects the battery from

a too high rate of charge above the gassing point, provided the meter and the battery are kept in step.

It was found that it would be desirable to have some automatic device in the discharge circuit to prevent the battery from being repeatedly discharged to too low a point. It was then decided to place a shunt trip circuit breaker in the discharge circuit between the battery and the controller on the locomotive. This shunt trip circuit breaker was inclosed in a box, mounted on the locomotive in a convenient place, and so constructed that it could be locked or sealed. Positive instructions were given to all concerned that no one except the repairman should open this box, and he only when the shunt trip breaker in it was tripped. He should then close the shunt trip and lock or reseal the box.

SPECIAL CONTACT OPERATES SHUNT TRIP BREAKER

The function of this shunt trip breaker is to prevent the discharge of the battery below a predetermined point. A special contact is provided within the ampere-hour meter to operate this shunt trip circuit breaker when the indicating hand on the meter makes contact at the point of maximum discharge. This prevents any further discharge of the battery, thereby making the locomotive inoperative from battery current until such time, as mentioned hitherto, when the repairman opens the box with his private key or breaks the seal and closes the shunt trip breaker.

This breaker is never tripped more than once by the same motorman, since it puts him to much inconvenience. If this breaker should be tripped while the locomotive is up in a room or a developing heading it would be necessary to have the machine pulled back to the trolley or the repairman sent in to close the shunt trip breaker just mentioned. Then it would be necessary to take the locomotive to the trolley, where the battery could be charged. After one such experience the motorman will watch the indicating hand closely when near the maximum-discharge contact.

CAN COME OUT IF TROLLEY WIRE IS REACHED

By closing the breaker in the charging circuit it is possible to charge the battery as soon as the locomotive is pulled to the trolley. This enables the motorman to charge the battery while he is waiting for the repairman to come and close the breaker in the battery-discharge circuit, or while he takes the locomotive to the repairman at the motor barn. As a result only a minimum length of time is lost.

This shunt trip breaker in the battery-discharge circuit, if used as outlined above, prevents the battery from being too completely discharged, provided the meter and battery are kept in step. If this breaker is not used properly I am convinced that it should be left off the locomotive. By its proper use, however, the life of the battery is prolonged.

It was also found advisable to install an automatic switch on the locomotive between the battery and trolley circuits. This switch operates when the trolley voltage drops below a predetermined point, or when the line current in the trolley wire is entirely cut off. If it were not for this switch the battery instead of being fed would discharge its current into the trolley wire.

A safety feature is embodied in this special switch in that it "kills" the trolley head as soon as it leaves the trolley wire. When the trolley pole is buckled down this feature makes the formation of a short circuit impossible, whereas without it a short circuit would

occur if the trolley pole came in contact with the metal cover or side frame of the locomotive. This provision also prevents the brakemen and others from receiving accidental shocks.

To further emphasize the efficiency of these switches, I might say that one of them was put on a locomotive for test in a remote section of the mine where power conditions were bad. The ampere-hour readings were recorded daily at the end of the shift, and it was found that the battery had a capacity of from twenty to thirty more ampere-hours at the end of the shift than it had when operated without the reclosing switch. Yet the machine handled in each case per shift within one or two of the same number of cars.

At some of the motor barns where there is no attendant, this switch has been used to protect the battery at night. It has been quite successful so far, though it is not as yet fully perfected. The manufacturer is working on it and in the near future expects to produce a switch that will give thorough satisfaction.

The combination storage-battery and trolley locomotives used in the Elkhorn division of the Consolidation Coal Co. were built according to the coal company's specifications and were so designed that the storage battery could be replaced with a cable reel if at any time the former proved unsatisfactory. In these locomotives the battery is intended to do only the work that the mules have hitherto done—placing empties and gathering coal from the rooms and development work. On the entries the locomotives takes its power from the trolley wire while at the same time the battery can be charged if necessary.

CLOSE CO-OPERATION IN DEVELOPMENT

In the effort to attain a perfect product experience in the practical operation and application of the previous types were considered, and each model was an improvement on its predecessor. This development of both locomotives and batteries was made possible only through the close co-operation of the battery and locomotive manufacturers.

Judging from the experience of the Consolidation Coal Co. in the Elkhorn division no question exists as to the success of the combination storage-battery and trolley locomotive. From time to time this company has added to its number of these machines until at present it has forty-seven and it has recently placed an additional order.

To give an idea of the faith now reposed in the storage batteries, I have seen the motormen, after failing to start a trip with current from the trolley wire, transfer to the battery in order to get started. After getting under way they transfer back to the trolley wire and deliver the trip to the parting or the tippie.

Miners Strike for Funeral Expenses of Victim of a Trolley Car

MARTIN STRENISKY, while off duty, was struck by a trolley car and crushed to death. As the companies have been paying \$100 to every man killed in and around the operation when men are performing their regular duties, the mine workers employed at the mine at which Strenisky had been working, the Spring Mountain Colliery of the Lehigh Valley Coal Co., at Hazleton, went on strike, June 16, to compel payment in this case also.



Discussion by Readers

Edited by
James T. Beard

Utilizing the Exhaust Steam at Collieries

THAT the steam exhausted from the engines at a colliery represents an enormous waste and should be avoided cannot be denied. As yet, however, but little attention has been given to the utilizing of this waste steam. My attention was drawn forcibly to this question by reading the excellent article of Dever C. Ashmead, *Coal Age*, May 13, p. 983, describing the plans now being put into operation to utilize the exhaust steam of the engines at the plant of the Price-Pancoast Coal Co., Scranton, Pa.

It is high time that we should realize the wastefulness of permitting the exhaust steam from our power plants to go unharnessed. The old saying is, "It is not a question of how much a man earns, but how much does he save?" Increasing the production of our mines will be of little benefit if we allow fuel to be wasted in the generation of power. As in other industries so in the mining of coal every effort must be made to utilize the waste products.

LOW-PRESSURE STEAM TURBINES DRIVE GENERATORS

Improved types of boilers have, in a measure, enabled us to economize on the amount of fuel burned; but we seem to have forgotten or overlooked the fact that the exhaust steam of the engine can still be utilized to good purpose. To that end, the Price-Pancoast Coal Co., after a careful study of the situation, recently decided to install low-pressure turbines, which will be driven largely by the exhaust steam from the power plants at the collieries. These turbines, in turn, will be employed for the generation of electric current, which will greatly reduce the amount of electric power formerly purchased by the company in the operation of its plant.

At the present time, the use of low-pressure steam turbines for the generation of electric power is something new. If the plan proves successful at this up-to-date colliery the idea will, no doubt, be duplicated at other plants. This and other instances show that we have, in the past, neglected important features in power production at our mines.

NEED TO ECONOMIZE IN THE PRODUCTION OF POWER

Many power plants are now using the waste culm from the great culm banks that for so long a time have been an eyesore in the anthracite regions. Means have been found for burning this culm successfully under the boilers. But, ere long, the culm banks will be exhausted and this cheap source of fuel will be no more. When that occurs the consumption of fuel, at the power plants of collieries, will form an important item on the cost-sheet and reduce the production of the mine some 10 or 15 per cent.

Facing these facts, it is only wisdom to prepare for the time when it will be necessary to economize in the production of power for the operation of our mines.

It will be argued that the increasing use of electricity will amply provide for this situation. But it must be remembered that much of this electrical power is dependent on the burning of fuel for the production of steam to operate the engine driving the generator.

The article of Mr. Ashmead draws attention to the loss due to the condensation of steam in the long transmission lines, at some of our anthracite collieries. Indeed, at many of these collieries, the steam lines are not protected as they should be and the resultant condensation is enormous, which represents another huge waste. In winter it is not unusual for an engine located 2,000 or 3,000 ft. from the steam plant to be rendered almost useless for the lack of sufficient steam pressure at the throttle. The steam gage at the boiler house may show a pressure of 110 lb. per square inch, which is reduced to 60 or 70 lb. at the engine house.

While it is generally conceded that it is better to build one large steam plant and conduct the steam by pipe lines to the different openings, for the purpose of driving hoisting engines, ventilating fans and other equipment, it is sometimes found more economical to operate two or more small plants located where the steam is to be used. We can but hope that this and every other effort made to utilize waste steam and economize on fuel in the production of power will be pushed to a successful issue.

RICHARD BOWEN.

Plains, Pa.

Firing and Caring For Steam Boilers

ECONOMY in steam-boiler practice can only be secured by proper firing and seeing that the boilers are thoroughly cleaned and kept in good condition. In addition to what has already been well said in reply to this question of firing and caring for boilers, which appeared in *Coal Age*, May 13, p. 1013, allow me to add a few words from my own experience.

As stated in the reply, it is of the first importance to use pure feedwater free from sulphates and carbonates that would form scale in the boiler. If scale is formed it is necessary that it be removed at regular frequent intervals, so that the flame and hot gases can readily transmit their heat to the water in the boiler.

Mention has also been made of blowing off a portion of the water, from time to time, for the purpose of removing the sediment from the bottom of the boiler. In my opinion this sediment should be blown out at least once every twenty-four hours, by opening the sludge or blowoff valve. The accumulation of sludge in the bottom of the boiler prevents the water from coming in direct contact with the bottom plates, which then become overheated and pitting of the plates results and there is danger of an explosion occurring.

Nothing is of more importance than a careful examination of the internal condition of a steam boiler. This must be done at regular intervals and all scale and sediment removed and the boiler washed out thoroughly. By

this means the life of the boiler will be extended and greater economy will be realized from its use. When a boiler is under steam the water level should be kept as constant as possible, usually a one-half to three-quarter glass is maintained. When blowing off the boiler, as mentioned, the glass should be lowered about one inch.

The most economical method of firing a boiler, in my experience, is obtained in the use of a mechanical stoker. The grate should be regulated to travel at a speed that will allow the coal to be entirely burned to ash by the time it has reached the back end of the furnace. In hand firing, my practice has been to spread the fresh coal lightly and evenly over the fire, taking care to keep the firedoors open as short a time as possible so as to prevent the inrush of cold air, which would chill the fire and cool the hot gases passing through the boiler tubes. At short intervals the live coals must be pushed back and the ashes and clinkers cleaned out. This should be done as often as conditions may require. The frequency with which a fire must be cleaned will depend on the purity of the coal and the degree to which the boiler has to be forced to raise the necessary amount of steam. It always pays to keep a clean fire.

ANDREW O. BAIN.

McKeesport, Pa.

Lacing Belts

WITH the exception of one thing, I can fully indorse all that E. K. Black has said in his excellent article on the selection and treatment of belts, *Coal Age*, May 13, p. 980. I do not approve of his method of lacing.

Speaking of the proper grade of belt to choose Mr. Black says: "Small pulleys operated at high speed require a high quality of belt, because internal wear takes place between the various plies of fabric and even between the fibers in each ply, each time the belt rounds the pulleys."

WHAT FOLLOWS THE POOR LACING OF A BELT

If this is true, which it is without question, what will happen to the lacing that he recommends?

Either one of two things must take place. For instance, either the lacers on the pulley side of the belt will slacken and throw all of the pull on the outside strands, or the lacers must adjust themselves by slipping in the holes. Whichever takes place, the tendency will be to shorten the life of the lacers and cause trouble.

Again, some of the lacers may slip while others hold, which will throw an excessive strain on some of the strands and cause them to break or possibly tear the belt. The first cut shown in Mr. Black's article illustrates one style that he says is "a poorly laced belt," which is obviously true; and yet the method that he denounces I have found to give better satisfaction than his approved method illustrated in the same figure, if the work is properly done.

The style Mr. Black condemns is what is known as a "hinged lacing" and, as its name implies, it has a hinge or bending motion that keeps all of the strands at a uniform tension when passing over the pulleys, thereby avoiding any slipping through the holes with the consequent wearing of both the lacer and the belt.

In using this method of lacing, prepare the belt exactly as directed by Mr. Black; but, instead of carrying the lacer across the joint to the opposite hole, pass it through between the ends of the belt, each time always

lacing from the same side of the belt, preferably from the pulley side, and taking pains to keep the lacer straight, free from twist and at the same tension.

If a very wide belt is to be laced it is better to begin at the middle and lace toward the edges, there being then less tendency to draw the belt out of alignment. When a belt lacer begins to show wear it is poor economy to try to patch it up: it is much better to replace the lacing with a new one than to take the chance of having it break under a load, which would cause much delay in operation and possibly damage the belt at the same time.

Kingston, Pa.

A. L. PARRISH.

Why Should Miners Oppose Introduction of Mechanical Equipment?

WRITING of labor's opposition to labor-saving machinery, Floyd W. Parsons says, in the issue of the *Saturday Evening Post* for May 22: "They . . . know that the substitution of mechanical means for doing things has not only reduced the physical effort of labor but has actually created vastly more jobs and higher wages."

Will this statement hold true in the coal-mining industry? I would like to hear from *Coal Age* readers who have been employed in mines before and after the mines were equipped with machinery. If, in any instance, there was a decrease in the number of men employed, following a mechanical installation at a mine, allow me to ask: How long a time elapsed before the number again reached the pre-machinery period? Could the decrease be attributed to a general car shortage or a depression in trade and industry at that time? It will also be of interest to ask: Does the present differential in favor of machine-mined coal justify the capital required to install the necessary machinery? It is my belief that in the long run, the miners would gain in wages by consenting to a lower machine-mined scale and withdrawing their opposition to machines: Under normal conditions, the consumer would be the most benefited and lower prices would stimulate consumption.

Chicago, Ill.

R. T. MCKEEN.

Injured in Blasting Coal

STRANGE as it may seem after condemning the many unsafe practices of miners in blasting coal in mines, a writer on this subject makes the statement [*Coal Age*, May 20, p. 1063] that he uses for tamping "the drillings of the hole made up into small cartridges" The statement, doubtless, will be a shock to practical mining men having any knowledge of blasting coal. The footnote following the letter draws needed attention to the danger of such a practice and is well put by the editor.

The fact that a man will use the drillings of a hole made up in cartridges ready for tamping and recommend this practice shows that he not only disregards his own safety but that of his fellows, and it is high time that he was warned of his danger and made to cease the practice. There is hardly a mine official who makes regular inspections underground but has, at some time or other, run up against a miner who, wittingly or unwittingly, was committing dangerous or foolhardy acts in the use of explosives.

This reference reminds me of two incidents that occurred in my own knowledge. One of these happened when I was a boy; but I well remember that the victim

of the accident lost the sight of both eyes. Either through ignorance or carelessness, the man had taken some frozen dynamite cartridges home with him and placed them in the oven in the kitchen for the purpose of thawing the explosive. The result was an explosion, which caused the injury just stated.

The second instance happened in 1912. At that time, I was called to investigate a case where a miner had attempted to mine out the primer of a missed shot. He was an intelligent miner; but, instead of drilling another hole six inches back of the shot that failed to explode, he started to mine the first hole with his pick.

The man was warned by his buddy not to make the attempt, but he persisted and a few minutes later the point of his pick came in contact with the detonating cap and the explosion followed. By a miracle, the fellow workman did not receive a scratch, although he was but six feet to one side of the hole. The shot blew out with the result that the poor man in this case also lost the sight of both eyes and his face was badly lacerated.

USE PROPER TAMPING MATERIAL

Good miners know that neither coal nor any gritty substance should be used for tamping a shot. If fine road dust or other suitable tamping cannot be had in the mine proper tamping material should be supplied from the surface. The Bituminous Mine Law of Pennsylvania prohibits the use of any combustible material in the tamping of a hole.

In regard to the use of frozen dynamite, every miner should know the danger of such a practice when charging and tamping a hole. Moreover, there is always the danger that the frozen charge will fail to be exploded by the detonating cap. It is strange that the officials in charge will permit frozen dynamite to be taken into the mine. If the law sufficiently covered this point and was enforced it would prevent many accidents from this cause. In my own experience, some superintendents and mine foremen shut their eyes to this danger. I have found miners supplied with frozen dynamite, and when this was reported to the mine foreman his reply was that they could thaw it out in the mine.

McKeesport, Pa.

MINE FOREMAN.

The Rockefeller Industrial Plan

SPEAKING of the health of workers in its relation to the industry in which they are engaged, many valuable points have been brought out in the recent letters on the subject that have appeared in *Coal Age*. It is a pity that the suggestions offered in these letters are not more generally put into practice in the larger coal operations throughout the country. It is a matter that should receive the most careful consideration of every mine official.

The letter of Thomas Hogarth, which appeared in the issue for April 15, page 769, was particularly interesting. I fully agree with him that the local officials in a coal-mining village are largely responsible for the unhealthy conditions that often surround the mines and the homes of the men working therein. A peep underground would often, with little doubt, show similar unhealthy conditions.

Although health conditions have frequently been discussed in mining organizations, little has been done to improve them, in the large majority of cases. As a rule, the company owns the houses, which they have

built just big enough to insure a small rent, without regard to the requirements of the families who are to live in them. Too often, no restrictions are placed on the tenants, by the management, and unsanitary conditions quickly develop.

While this is true in many instances however, a goodly number of the larger coal companies have realized the necessity of enforcing rules and regulations designed to improve the habits of living among their employees. The passage of the compensation laws enacted by many states, requiring due compensation of workers and their dependants for accidents that occur in the mines, has naturally done much to improve conditions relating to the health of the workers.

Some companies require a physical examination of the men they employ, and limit the age of employment to 45 yr., with the purpose in view of securing strong, healthy, able-bodied workers, who will be less liable to accident while at work. Bad sight or hearing and similar defects are sufficient to debar men from employment. In numerous other ways besides, we find many companies now preaching the gospel of good health.

This brings me to speak of a few of the features of the Rockefeller Industrial Representation Plan, adopted a few years ago in the various operations of the Colorado Fuel and Iron Co. The Rockefeller plan provides for a Sanitation, Health and Housing Committee of six persons, three being selected by the management and three by the miners. On the committee there are generally one or two medical men.

VISITATION OF EACH CAMP BY COMMITTEE

The duty of this committee is to visit the several camps of the company and make a thorough investigation of each and report the conditions they find. The committee is clothed with power to recommend a general cleanup and to suggest any changes that they may see fit. The local officials know that the recommendations and changes suggested by the committee must receive prompt attention on their part.

As a result, there is little sickness in the mining towns and camps of the company. The investigation includes all homes, schools, stores, boarding houses, bath houses, club houses and their surroundings. The conditions relating to sanitation and the health of the workers underground are supervised by a Safe and Accident Committee, which likewise consists of six persons. It goes without saying that it is a pleasure to work in the mines of this company.

In addition to the two committees named previously, there is an Education and Recreation Committee of six persons, who have charge of all things pertaining to education, religion and recreation. While I am not a preacher or the son of a preacher, neither am I a hard-boiled or hand-painted individual, going around with a red handkerchief about my neck.

However that may be, certainly I would not care to live in a community that has no Sunday School or place of worship. The Sunday School is a great feature in educating our boys and girls in right ways of living. The Y. M. C. A. branch of the Colorado Fuel and Iron Company, who have charge of the miners' club houses, have done and are doing a wonderful work in their line. Very much has been accomplished in the education of the foreign classes among the mine workers, who are fast adopting sanitary methods of living.

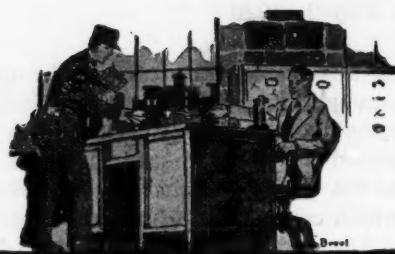
Farr, Col.

ROBERT A. MARSHALL.



Inquiries of General Interest

Answered by
James T. Beard



Strength of a Mine Dam

SOME years ago, I remember, there appeared in *Coal Age*, [Vol. 1, p. 920] a formula for calculating the thickness (t), in inches, of a mine dam that would withstand a pressure p , in pounds per square inch, when the width of the opening or span of the arch was w , in inches, and the shorter radius of the dam was r , in inches, the safe crushing strength of the material being S , in pounds per square inch. The formula was

$$t = \frac{pw \sqrt{4r - 1}}{4S}$$

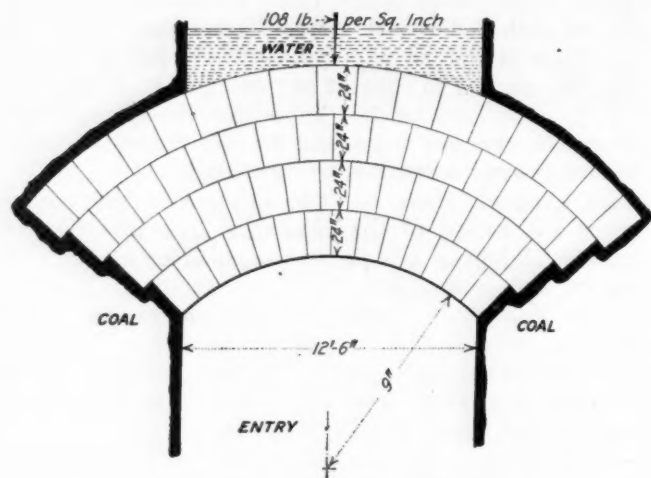
In applying this formula to a dam such as shown in my sketch and constructed of wooden blocks of spruce, should the estimated crushing strength of the material be taken parallel to or at right angles to the fiber of the wood? Please explain why.

A dam was built in a mine according to the dimensions shown in the sketch. The dam was supposed to withstand a water pressure of 108 lb. per sq.in.

Cadomin, Alta., Canada.

T. B. WILLIAMS.

The dam shown in the accompanying figure is constructed as a circular arch and conforms to the prin-



PLAN OF MINE DAM BUILT OF WOOD BLOCKS

ciples of an arch. In an arch, the weight or pressure supported is transformed into a thrust or line of pressure that is always at right angles to the radius of the arch. When an arch dam is properly built of wooden blocks, as shown in the figure, the thrust or pressure is at right angles to the fibers of the wood.

In general, it may be stated that the ultimate crushing strength of good spruce timber, when the force is at right angles to the fiber, is 800 lb. per sq.in. Assuming that the ribs of the heading in this case are of solid coal capable of supporting the thrust of the arch without yielding, it is fair to take the safe crushing strength of a good quality of spruce as 250 lb. per sq. in., which would make the factor of safety about three.

On this basis, the calculated thickness of the dam for the given dimensions would be found as follows:

$$t = \frac{108 \times 150 \sqrt{4 \times 108 - 1}}{4 \times 250} = \text{say } 336 \text{ in., or } 28 \text{ ft.}$$

The thickness of the dam, as shown in the sketch, is but 8 ft. Calculating the stress in the material due to a pressure of 108 lb. per sq.in. behind the dam, for this thickness and the given dimensions, we find it is over 875 lb. per sq.in., which exceeds the ultimate crushing strength of the material exerted across the fiber.

Again, assuming a safe crushing strength across the fiber of 250 lb. per sq.in., and calculating the pressure this dam would support, taking the dimensions as given in the figure, we find the following:

$$p = \frac{4St}{w \sqrt{4r - 1}} = \frac{4 \times 250 \times 96}{150 \sqrt{4 \times 108 - 1}} = 30.8 \text{ lb. per sq.in.}$$

If the walls supporting the thrust of the arch are not firm and solid, it will greatly interfere with the stability and strength of the dam.

Carbon Dioxide vs. Blackdamp

PLEASE explain the meaning of the term "blackdamp" and state how it differs from carbon dioxide. It has always seemed to me that there was no difference between these two gases as they are found in mines.

Scranton, Pa.

MINER.

To the miner, carbon dioxide has practically the same meaning as blackdamp, which is to him the more familiar term. Carbon dioxide, was formerly called "carbonic acid gas," but the latter term is seldom used today.

Carbon dioxide is a gas formed by the chemical union of one atom of carbon and two atoms of oxygen, as indicated by the symbol CO_2 . The gas is colorless, odorless and when unmixed with air will not support either life or flame. It is produced by the complete combustion of carbon or carbonaceous matter in a plentiful supply of air, also by the breathing of men and animals, burning of lamps and other forms of combustion of carbon in air or oxygen.

Blackdamp, on the other hand, is a variable mixture of air deficient in oxygen, and carbon dioxide. In other words, it is a chemical mixture of carbon dioxide with nitrogen and oxygen, in various proportions. Since the carbon dioxide and nitrogen form the larger proportion of blackdamp and neither of these gases support life or combustion, the properties of blackdamp are much the same as those of carbon dioxide. The presence of blackdamp in a mine is due to the generation of carbon dioxide and the depletion of the oxygen in the air.

These gases (blackdamp) are found in poorly ventilated places in the mine and accumulate in the dip workings, swamps and other low places. They are detected by the dim burning of the lamps or their final extinction when much of the gases is present.



Examination Questions

Answered by
James T. Beard



Miscellaneous Questions

(Answered by Request.)

Ques.—If a current of 52,000 cu.ft. per min. is passing through a mine, how many tons of air is passing in 8 hr., if the thermometer is 32 deg. F. and the barometer, 29.2 in.?

Ans.—The weight of one cubic foot of dry air, at the given temperature and pressure, is

$$w = \frac{1.3273 \times 29.2}{460 + 32} = 0.078775 \text{ lb.}$$

The total weight of air passing in 8 hr., in this case, is then $(8 \times 60 \times 52,000 \times 0.078775) \div 2,000 = 983\frac{1}{2}$ tons.

Ques.—What are the names of the different electrical currents? Give the advantage of each.

Ans.—The two different kinds of current used in electric mining are, direct current and alternating current. In mining practice, the chief advantage of direct current is the better speed control it affords in the operation of the machines employed. Direct current is continuous instead of alternating and better adapted for the operation of the motors and machines in use, affording as it does a wider range of speed than is possible with alternating current. One great advantage of alternating current is the saving effected by its use where electric power must be transmitted over a considerable distance. The high voltage of the current permits of the transmission of the same power with a less cost for copper; and there is the added advantage that the current is more readily transformed to one of a higher or lower voltage when desired. It often happens that workmen are more careful to avoid accidental contact with live wires carrying a high voltage than when a lower voltage is used.

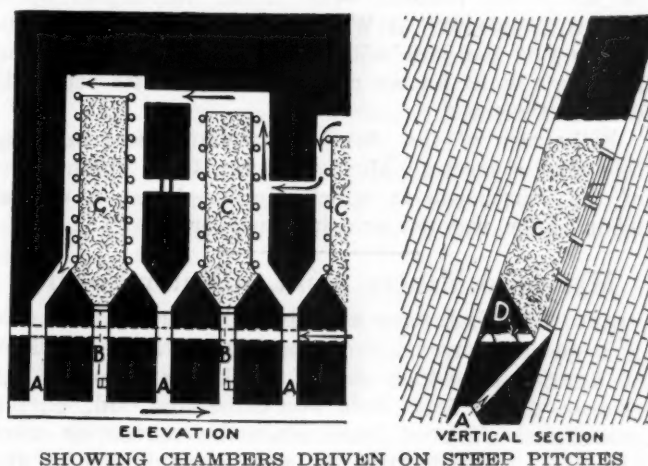
Ques.—What advantages or disadvantages may be expected from connecting the underground workings of two or more mines, and what dangers are likely to arise therefrom?

Ans.—The chief advantage in connecting the underground workings of mines is the opportunity thus afforded for the escape of the workmen from the mine in case of accident. When mines are thus connected underground it is not necessary to provide a separate escape shaft, as required by the mining laws of most states; but mines so connected are subject to the same effects occurring in either of them, which is a disadvantage to the mine in which better discipline is maintained. The flooding of one mine generally means a flooding of both where the workings are connected. There is also the chance of the leakage of air from one mine to the other, causing an increase in the cost of ventilation for the mine requiring the higher water gage. Again, unless the connecting doors are locked, there is nothing to prevent the men passing from one

mine to the other, which would make it difficult to maintain the necessary discipline and control.

Ques.—(a) Show by plan and profile how you would open up chambers in a seam 30 ft. in thickness, of a soft gaseous nature and having a pitch of 60 deg. (b) Also explain how you would conduct the ventilation in case a chamber in the middle of the panel ran and blocked.

Ans.—(a) In the accompanying figure, is shown the general plan, in elevation, and the cross-section or profile of chambers driven in a thick seam of coal having a steep inclination and generating gas. The inclination of the seam shown in the figure is about 70 deg., but the method of working is practically the same as that required on a 60-deg. pitch, under the same



conditions. The work is started by driving chutes *BB* up from the gangway and at such an angle of inclination or pitch as will afford proper control of the coal sliding down the dip.

The gangway should be located in the roof of the seam, as shown in the cross-section at *A*. The chutes are driven up until they strike the floor of the seam. At this point, as shown in the figure, crosscuts are driven to the roof of the seam where an airway is driven in the seam, above the gangway and connecting the several crosscuts leading to the chutes.

Strong batteries are built at the head of each chute and the chamber is then widened out at an angle of about 45 deg., as shown in the figure. Manways *AAA* are now driven up from the gangway, between the chutes, and branched to connect with the manways at the sides of each chamber. The chamber manways are maintained by setting rows of posts two or three feet from each rib and lining these with plank, as indicated. As the chamber is driven up, the space between the two manways is kept full of coal.

(b) In case one chamber runs and blocks the ventilation, it is only necessary to carry the air past that chamber by opening the doors at *D* leading to the airway and conduct the air across the blocked chamber.



The Labor Situation

Edited by
R. Dawson Hall



Miners Would Evict Negroes from Mines

SOME of the miners of the Kanawha region who belong to the United Mine Workers of America are disposed to draw the color line. On Thursday, June 17, three negro miners employed at Hernshaw, W. Va., were threatened with violence by other miners unless they left forthwith. Three deputy sheriffs were sent to Hernshaw to protect the men and, in consequence, the three negroes did not leave the mine at which they were employed.

Grand Jury Investigates Matewan Murders

INVESTIGATION of the fight between the Baldwin-Felts detectives and citizens of Matewan, May 19, in which ten persons were killed, was begun by a special grand jury at Williamson on June 21. Deliberations of the jury will be behind closed doors, and nothing will be known of its work until its report is made to the court.

Fifty men of the state constabulary were on duty following a meeting Monday night, June 20, in front of the courthouse at which Mother Jones, a radical labor leader, was the principal speaker.

Maryland Miners Want to Enter Politics

A POLITICAL twist was given the deliberations of a special convention of the United Mine Workers of district 16, which covers the Upper Potomac and Georges Creek fields, held at Cumberland, Md., during the second week of June, when the convention went on record as endorsing the plan promulgated by the American Federation of Labor, to support a non-partisan ticket both for state and national offices. The convention went a step further and declared it would support only those who stood for the federation's program and would fight those whose record had been inimical to labor. The president of district 16 called upon the mine workers to refrain from joining any National Guard organization.

Unionism Grows in Williamson Field

OF THE 8,000 miners in the Williamson field it is estimated that approximately 80 per cent, or 6,400, have become affiliated with the United Mine Workers. It is no secret that a great many of the miners in the Williamson region were reluctant to join the United Mine Workers, but did so out of fear and in order to avoid trouble. Many of the larger operations have been shut down as a result of the affiliation of the miners at such operations with the union. Some of the smaller companies have continued to operate but have given their miners to understand that under no circumstances will such companies ever agree to either the closed shop or the check-off.

Mother Jones, the aged labor agitator, made a series of addresses to the miners of the Williamson field during

the third week of June on the eve of the beginning of the grand jury investigation of the Matewan trouble. Mother Jones' utterances were tame as compared with her usual inflammatory speeches. She did not counsel violence but told the miners that they were "cowards" and had a "streak of yellow" for not asserting their rights before. About 1,500 miners heard her at Williamson.

Wyatt Troubles Ended, but Not by Peters

DIFFERENCES between the Consolidation Coal Co. and some of the miners employed by it at Wyatt, W. Va., were adjusted during the second week of June, but not until nearly the entire force of officials of sub-district 4 visited the Wyatt plant and persuaded the miners to return to work. It is said that the short-lived strike was due to a misunderstanding.

It was considered significant that H. E. Peters, president of the subdistrict, was not among the officials who aided in settling the strike though board members and others were on hand. Charges preferred against Peters by C. F. Keeney, president of the district, may have had something to do with Peters' absence, as several hearings have been held behind closed doors.

Willis Branch Agitation Led by Convict

ALTHOUGH the Willis Branch Coal Co., one of the "open shop" mines in the New River field, is operating, a desperate effort is being made by the United Mine Workers of district 29 to shut down the company's mines. One of the leading spirits in such an attempt is Tony Stafford, who last January was tried for attempted murder in trying to shoot up the mines of the E. E. White Coal Co. at Glen White in November, 1917, and who was sentenced to serve five years in the penitentiary.

Stafford, who is an organizer for the United Mine Workers, has told members of his organization that the Willis Branch Coal Co. mines must be closed down or else the supply of food for the mine workers at the Willis Branch mines will be stopped. In several instances members of the United Mine Workers have used force in keeping incoming miners away from the mines. It was at the Willis Branch mine that an attempt was made last winter to blow up the home of the general manager.

Nova Scotia Employees Get Wage Award

PUBLICATION of the award of Judge Patterson's Conciliation Board shows that the employees of the Nova Scotia Steel & Coal Co. have received increases of 4½ to 7c. per hour, according to classification of the work performed. Though less than demanded the difference between the award and desired wage is small. The award was published June 9.

Mine Workers Present Their Initial Argument To Anthracite Wage Commission

Argue Against an Agreement Based on Alleged Inequities of Roosevelt Commission—
Not Satisfied That Wage Shall Be Multiplied Merely by Cost-of-Living Factor—Plead
for Living Wage, New Determination of Equities and Abolition of Contracting

ON JUNE 24 the commission appointed by President Wilson to hear the anthracite wage controversy held its first meeting at the County Courthouse in Scranton. This commission is composed of Dr. W. O. Thompson, president of Ohio State University, chairman and representative of the public; W. L. Connell, representing the operators, and Neil Ferry, who represents the mine workers.

The operators were represented by the subscale committee consisting of S. D. Warriner, president of the Lehigh Coal & Navigation Co.; W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., and C. F. Huber, president of the Lehigh & Wilkes-Barre Coal Co.

John T. Dempsey, president of the district No. 1, United Mine Workers of America; Thomas Kennedy, president of district No. 7, U. M. W. A.; C. J. Golden, president of district No. 9, U. M. W. A., and Philip Murray, vice-president U. M. W. A., were in charge of the case for the anthracite mine workers.

The first meeting of the commission was held at nine o'clock in the morning, and after preliminary organization the case of the mine workers was presented to the commission by Mr. Murray, who was followed in order by the district presidents as given above.

TERMS UNDER WHICH QUESTION IS SUBMITTED

Mr. Murray outlined the negotiations from their commencement last March to the present time and President Wilson's proclamations in regard to the case. Following this he presented the conditions under which the problem was submitted to the commission and the understanding between the operators and the miners, which are as follows:

The understanding between the representatives of the operators and the miners is that in submitting our grievances to the commission, all past offers, suggestions and proposals by either party are as of no value as precedents. The proceedings are, as it were, opened up anew. Neither party is bound or in any way compromised by what has taken place in previous conferences or mediation proceedings.

(1) The terms and provisions of the award of the Anthracite Coal Strike Commission and the subsequent agreements made in modification thereof or supplemental thereto, as well as the rulings and the decisions of the Board of Conciliation, will be ratified and continued except in so far as they may be changed by the award of the commission.

(2) When the award of the commission is made it will be written into an agreement between the anthracite operators and miners in such manner as the commission may determine.

(3) It is understood that neither operators nor miners are in any manner bound by any tentative suggestions that have been made during the period of

their negotiations, and that either side shall use its own discretion in the presentation of its case in connection with the matters at issue.

In order that our position may be clearly understood and that the commission may have an opportunity as our evidence is submitted to relate it to the different points in our argument, I shall briefly outline in advance what the different steps in our argument will be.

HOW MINERS WOULD JUSTIFY NEW CONTRACT

We expect to show:

(1) That the cost of living has increased 104 per cent from July, 1914, to May, 1920.

(2) That the increase in pay has not kept pace with cost of living, and that a further increase of 36 per cent in pay is required.

(3) That the principle of increased living cost should be abandoned.

(4) That the rates of pay of bituminous mine workers are greater than those of anthracite mine workers and that the anthracite wage should be equal to the bituminous wage.

(5) That the old theory of fixing wages by the law of supply and demand has been condemned and wages should be based on the new conception which proceeds on the principle that all workers, including unskilled wage earners, should receive such rates of pay as will suffice to support their families in health and decent comfort.

(6) That wages can be fixed on these bases.

(7) A comparison of wages paid anthracite and bituminous mine workers and the relative opportunity for work and earnings.

(8) The hazards which are associated with the mining of anthracite coal.

(9) From official data that there is no relation between the labor cost of mining anthracite coal and the selling price of the product.

(10) That persistent attempts have been made to eliminate competition in the sale and production of anthracite coal from 1873 to 1898.

(11) The reasons for the recognition of the United Mine Workers of America.

Before presenting the synopsis of the argument McMurray stated the eighteen demands that the miners make, but the order has been changed in this article to avoid repetition and to present under each of the demands an outline of the arguments presented by the representatives of the miners. After each paragraph will be shown the name of the author:

DEMAND NO. 1—A TWO-YEAR CONTRACT

We demand that the next contract be for a period not exceeding two years and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

The demand for two years is reasonable, as the last 4-year contract had to be re-opened three times. (Golden and Kennedy.)

If the making of individual contracts is permitted after the execution of the general contract it leaves the door wide open so that those operators who wish to evade its terms can do so by making individual contracts. Where these contracts exist there is a tendency to favor the contractor with a greater number of cars. If it becomes necessary to make supplemental agreements, then the parties to the original contracts are the proper ones to make them and it is unfair to permit a condition to exist whereby the terms of the general contract can be evaded by the making of individual contracts. (Dempsey.)

The intent of this demand is that the custom of giving to

one man a contract for two or more working places be prohibited. Contracts of this sort necessitate the hiring of miners on the part of the contractor. Contractors pay the miners company wages while they receive the contract prices and pocket the different. This system permits the operator to favor certain individuals. Elimination of this system would increase production by giving each miner what he earns and would lessen discontent and dissatisfaction. (Golden.)

There should be one contract in the anthracite region and only one. The old method permits the cutting of rates and removes one of the principal reasons which induce workers to enter trade agreements. Every man should have a right to work on contract and no monopoly of contract work should be given to a few sets of miners. (Kennedy.)

DEMAND NO. 2—BITUMINOUS WAGE SCALE

We demand that the present wages of the anthracite mine workers be increased to correspond to the increases granted the bituminous mine workers by the President's Coal Commission.

This demand contends that the rate of pay for anthracite workers should be the same as for the bituminous, and that daymen should receive at least \$6 per day. Increases received by contract miners from 1914 were 7 per cent in 1916 and 40 per cent in 1918, which compounded is 49 per cent.

DEMAND NO. 3—UNIFORMITY IN WAGE SCALE

We demand that a uniform wage scale be established, so that the various occupations of like character at the several collieries shall command the same wage.

DEMAND NO. 4—SHOVEL MEN WANT MORE PAY

We demand that shovel crews operating for coal companies shall be paid not less than the rates paid by contractors to shovel men.

KANSAS:

Shovel engineers	\$213.58 per mo., plus \$1 per day
Cranemen	155.83 per mo., plus \$1 per day
Firemen	110.08 per mo., plus \$1 per day

ANTHRACITE CONTRACTOR'S SCALE:

Steam shovel engineers...	\$206.65 per mo., 9 hr. day
Steam shovel cranemen...	159.73 per mo., 9 hr. day
Steam shovel firemen ...	150.30 per mo., 10 hr. day

NEW YORK SCALE:

Shovel engineers	\$250.00 per mo., 8 hr. day, double time
Shovel cranemen	200.00 per mo., 8 hr. day, double time
Shovel firemen	150.00 per mo., 8 hr. day, double time

CRANBERRY CREEK COAL Co.:

Shovel engineers	\$132.42 per mo., 8 hr.
Cranemen5327 per hr.
Firemen49 per hr.

LEHIGH & WILKES-BARRE COAL Co.:

Shovel engineers	\$0.61 per hr., 9 hr.
Firemen47 per hr., 9 hr.

DODSON COAL Co., STRIPPING:

Shovel engineers	\$169.00 per mo., 10 hr. day
Cranemen	145.51 per mo., 10 hr. day
Firemen	115.00 per mo., 10 hr. day

LEHIGH COAL AND NAVIGATION COAL Co., SUMMIT HILL:

Engineers	\$200 per mo., 54 hr. week
Cranemen	146.00 per mo., 54 hr. week
Firemen46 per hr., 12 hr. day

LEHIGH VALLEY COAL Co., HAZELTON SECTION:

Engineers	\$135.84 per mo.
Firemen	117.34 per mo.

G. B. Markle Co.

Engineers62c. per hr. 8 hr.
Cranemen52c. per hr. 8 hr.
Firemen47c. per hr. 8 hr.

DEMAND NO. 5—EASY JOBS TO BE SHORT ALSO

We demand that the eight-hour day be extended to all classes of inside and outside day labor and monthly men, with time and half time for overtime and double time for Sundays and holidays.

DEMAND NO. 6—CLOSED SHOP AND RECOGNITION

We demand closed-shop contract, which means full recognition of the United Mine Workers of America as a party to the agreement.

After describing fully the organization of the United Mine Workers, the following points are offered in favor of its recognition: An agreement is necessary because the organization is the only union capable of controlling the situation. A closed shop is necessary to make every individual who is benefited by the agreement become a party to the agreement. A check-off is necessary that the organization may properly raise funds to carry out the contractual relations. All three are correlated and if welded together and inserted in a joint agreement they will become a power for compelling obedience to the agreement, for the maintenance of discipline and for a strengthening of the constructive force necessary for the peace and stability of the region. (Kennedy.)

There are elements in the country today which threaten its industrial stability and

have on more than one occasion threatened it in our midst. There is only one means by which the influences of these elements may be offset and that is by an award which will give to the United Mine Workers of America, a responsible and capable organization, full jurisdiction and control by recognizing it as a party to the contract together with the closed shop and the check-off. (Dempsey.)

A closed-shop contract will improve conditions by educating the mine workers as to agreements and contracts and will do away with small strikes. The union miner has the same intolerance to a non-union miner as the soldier has to the slacker. If the anthracite operators are going to hold the organization responsible for the carrying out of contracts they should be willing to agree that all of their workers become a party to the agreement.

DEMAND NO. 7—CONSIDERATION MEN'S PAY

We demand that all deadwork shall be paid for on the consideration basis existing at the colliery and that where more than one miner is employed they shall both receive the same rate.

In many parts a consideration rate is paid to miners doing dead work. Still there are some collieries where one miner is paid the consideration rate while all others receive the laborer's rate. This is evidently unfair, as the miners have labored years to become certified. (Golden.)

The point involved is that the contract miner, being a highly skilled man, when called upon to do dead work not covered by contract rates should suffer no loss in earnings by having to do it at the

lower company rates, but should at least receive the rate usually paid to skilled miners employed at the work referred to. (Dempsey.)

The operators maintain in their attempt to justify this condition that the company should not have to pay the wages of two skilled miners when one miner and a helper could do the work, but on the other hand both miners would, if permitted to work on contract, at least earn miners' wages. (Kennedy.)

DEMAND NO. 8—PAY FOR ALL INCIDENTAL JOBS

We demand payment for all sheet iron, props, timber forepoling and cribbing.

The rates for anthracite mining were fixed years ago, when the men had little to say in the matter. Most of the rates were fixed on solid mining. When the companies started to remove pillars the miners were required to do more than double the amount of propping. No compensation is paid for most of this extra work. (Kennedy.)

This demand is prompted by the fact that in some places these items are paid for and in other places they are not. There is grave doubt as to the correctness of the allegation of the operators that where they are not paid for they are covered in the car price or in the yardage or some other item. (Dempsey.)

DEMAND NO. 9—PRIVILEGE TO HAVE WORK

We demand that where miners are prevented from working on account of lack of supplies they shall be accorded the opportunity of making a shift at some other work.

When miners report for work and are prevented from working through no fault of their own they should be permitted the opportunity of making a shift at some other work. As a rule there are places in the mines where these men could be placed to make day's wages. (Golden.)

If the employer fails to fur-

nish the necessary supplies for the miners to work and these miners go to the mine believing that opportunity for work will be furnished them, then the responsibility to furnish work for these men should be upon the operator and he should unquestionably be required to furnish it. (Dempsey.)

DEMAND NO. 10—EQUITY, NOT USAGE, TO RULE

We demand, in the settlement of grievances, that the aggrieved parties shall have the right to demand settlement on the basis of equity, and if such equity settlement is requested the conditions of 1902 shall not enter into or prejudice the case.

The conditions prior to April 1, 1902, were the conditions upon which the Anthracite Coal Strike Commission predicated its award. During the succeeding years these conditions have been maintained except as modified by the award of the commission and the subsequent agreements. Prior to 1902 no organization existed in the region to protect the interests of the employees. Statistics show the anthracite industry at that time had a large surplus labor supply with an opportunity to work about half the working days in a year. Under these circumstances the employee was largely at the mercy of the employer in so far as the working conditions were concerned. Overzealous foremen, seeking to establish a record, and companies eager to produce coal at the lowest possible cost, introduced practices and rates not based upon justice nor with the welfare of the employee in mind, but at such a figure and under such conditions as would give the employee the smallest possible wage and the employer the largest possible profit.

The umpire of the Conciliation Board has on several occasions, when unjust and burdensome conditions were before him for adjudication, ruled that the grievances must be decided in the terms of the award and subsequent agreements. Thus these conditions, no matter how unjust or inequitable they may be, no matter what changes the intervening years may have wrought to make conditions more bur-

densome, must be maintained. Many of these conditions then in existence had a direct bearing upon the calling of the strike, and these conditions, except where changed by the awards of the Anthracite Coal Strike Commission, became the basis of the awards and subsequently the basis for all agreements in the region. Therefore if an inhuman, unjust, unfair condition existed in 1902 that was not changed, that condition is still in existence and will continue in existence until this policy is eliminated or until both sides at the colliery mutually agree to abolish such unfair condition.

In other words, the anthracite mine workers do not want to be chained to the conditions in effect in 1902. All others, including the anthracite operators, are free to do business on the basis of the present, while this is denied to the employees. The anthracite operators are not producing or selling coal on the conditions in effect for 1902; they have improved the old conditions of mining and selling coal; have improved the handling of coal, and if it is fair for them to get away from the 1902 basis it is equally fair for the anthracite mine workers to be permitted to do likewise. Equity is one of the cardinal principles of the American Government as reflected in the courts, and to ask that this be done in the anthracite region is simply seeking to have elemental justice established in the settlement of disputes.

DEMAND NO. 11—UNIFORM REFUSE RATE

We demand that a uniform rate of 17c. per inch be paid for all refuse in all kinds of mining up to 10 ft. wide and a proportional rate be applied for all workings 10 ft. wide.

In some parts of the district refuse in the vein is paid for at various rates and in others it is not paid for at all. (Golden.)

The mining and removal of the refuse means much work and considerable expense, for which in a great many instances no compensation is paid. (Dempsey.)

The present system of payment for refuse lacks in uniformity and in equity and has been productive of many grievances, countless strikes and bad feeling. The only uniform and fair system for the payment of this refuse is to pay for it on the inch basis.

DEMAND NO. 12—PAY BY LEGAL TON, NOT BY CAR

We demand that wherever miners are now paid on the car basis hereafter they shall be paid on the legal-ton basis and that dockage shall be eliminated.

The men workers contend that if it is legal and considered right for the coal operators to sell their coal to the public on the legal-ton basis it is also legal and right for the men who mine the coal on a car basis to have the coal they produce paid for on the legal-ton basis. If it is practical to sell coal to millions of consumers on the tonnage basis it would also be practical to pay about 40,000 contract miners on the same basis. The two best arguments against dockage are that

the operators themselves are cutting it down and that under the laws of Pennsylvania it is illegal. (Kennedy.)

The system of paying contract miners by the car is not fair and equitable. Under this system not only are they paid an inequitable rate but there are other conditions that are obsolete and intolerable. Miners are required to top their cars and, owing to long hauls which knock off the topage, the miners are docked for short measure. This practice is unfair. (Dempsey.)

DEMAND NO. 13—THREE MEN ON REEL MOTOR

We demand that on all reel locomotives one motorman and two brakemen be employed and that on all other locomotives and engines assistants or patchers be employed, and that when motormen or engineers are repairing their motors or engines their assistants shall be employed to help in the work.

After the cable has been attached to the trolley wire, the motorman and brakeman proceed to the face. Thus if, while there, several hundred feet perhaps from the gangway, anything occurs creating a dangerous condition, there is

no one to remove the cable from the trolley wire and thus remove the danger. In the repair of motors and engines it is necessary to remove or replace heavy parts. It is moreover dangerous to have an engineer alone in this work.

DEMAND NO. 14—COMPENSATION FOR LOST TOOLS

We demand that employees shall be compensated for all tools lost through no fault of theirs as a result of squeezes, water or fire.

If tools are lost in the manner set forth we believe that the company is responsible and that such tools should be replaced. (Kennedy.)

Miners are required to have an expensive outfit of tools, and to lose them through no fault of theirs would greatly

embarrass most of them. (Dempsey.)

This demand is self-explanatory and self-justifying, and as it has been conceded by the operators in their offer to the mine workers I shall not enlarge upon it. (Golden.)

DEMAND NO. 15—TOOLS FOR COMPANY WORK

Where contract miners are employed doing company work, the company shall supply them with the necessary tools, and failing to do so shall compensate them by paying each of them not less than one extra hour per day for the use of such tools.

A miner invests from \$50 to \$100 in tools and must replace them as they become worn out. And when the company em-

ploys him at company work and has him use his tools for its benefit he should be compensated. (Golden.)

DEMAND NO. 16—FREE TOOLS FOR DAYMEN

We demand that the company shall supply to all company men the necessary tools free of charge.

Many companies now supply tools to company men free of charge and those that require

company men to buy their own tools do not pay any higher wages than those paid to the men who get their tools free of charge. It is evident that

this practice is unfair. (Kennedy.)

This demand deserves consideration because the price of tools is a considerable item and in the case of the company miner makes his actual earnings somewhat less than the rates specified. (Golden.)

DEMAND NO. 17—WEIGHMEN AS COMMITTEE MEN

We demand that check weighmen and check docking bosses be permitted to serve as members of mine committees.

These men are experienced and are well versed in the terms of agreements and contracts and moreover have time and opportunity to give attention to the grievances at

the least expense. They are not strangers about the mine and are in reality employees of the company, temporarily in the employ of the contract miners. (Dempsey.)

DEMAND NO. 18—RIGHT TO CONSIDERATION WORK

We demand that where contract miners encounter abnormal conditions in their working places they shall have the privilege of going on consideration work. A definition of consideration work shall be written into the agreement.

At present unless the foreman agrees that the man is to work on the consideration basis the miners have nothing else to do but quit, because if they continue work and take up a grievance it will be held that they had no business to claim consideration rates where no agreement for the consideration basis had been reached with the foreman. Unless this is corrected in the future, serious trouble may result, brought on by the failure of the men to make a living wage and by a denial of the right to seek redress under the agreement.

Definition of Consideration Work—Whenever deficient or abnormal conditions are encountered in the working place by contract miners which prevent the miner or miners from

earning a reasonable day's wage, the miner or miners affected shall make such fact known to the mine foreman, and it shall be the duty of the mine foreman to visit the working place and endeavor to adjust the matter with the men affected by placing them on consideration work and wages while such abnormal or deficient conditions are in existence, and if the foreman and the men affected shall disagree as to the facts and fail to settle the matter on the consideration basis, then the grievance shall be taken up through the proper channels, the work shall be continued, and whatever settlement is made shall be retroactive to the date upon which the grievance was raised with the mine foreman. (Kennedy.)

After the presentation of the outline of the miners' case in the briefs outlined above, Mr. Murray requested postponement of the case until Monday because, owing to the change in the place of sittings, the miners' statistical bureau had been unable to move and would not have its data ready for use until Monday. The commission granted the request and the meeting was adjourned.

NEWS FROM

THE CAPITOL

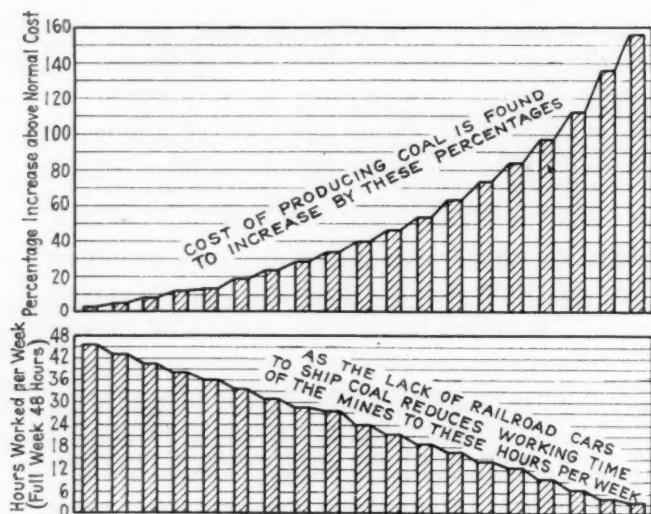
BY PAUL

WOOTON



What Makes Coal Costs High?

THE National Coal Association is circulating a diagram based on figures contained in the report of the Engineers' Committee of the Fuel Administration, recently published. This diagram, reproduced below, shows how costs of production of coal are affected by short running time which results from lack of railroad cars.



Federal Trade Commission Asks for April and May Cost Reports

IN A letter to the coal operators transmitting the March bulletin showing costs of coal production in the country and furnishing blanks on which the operators are requested to report costs in May, Francis Walker, chief economist of the Federal Trade Commission, points out that April was the first month in which the 27-per cent wage advance became operative and that the actual effect on costs of the new wages should be known and published. He urges coal operators who have not sent in their April cost reports to the commission to do so at once.

His letter concludes:

"We find in our correspondence with the operators in the coal industry that a very large proportion of them see that in the long run it is bound to react to their interest to have on record with such a disinterested Federal organization as this commission the actual facts relating to their industry, so that at any time the charge is made that profits are too high it can be shown what the facts relating to that charge really are, and likewise we find that in controversies relating to wages the figures and the reports of this commission are used by both the operators and the miners as authority upon the conditions existing in the industry.

"Operators are requested to make every effort to file their reports when due in order that the commission may issue

its bulletins promptly while the information is of current value. This is not to be regarded as in any sense a departure from the announced policy of the commission to refrain from compulsory proceedings until final determination of the pending litigation. This letter seeks your voluntary co-operation."

Appropriations Cease, Bituminous Commission Activities Terminate

AS the appropriations for the President's Bituminous Coal Commission were no longer available after June 30, the work of the commission came to an end on that date. The members, however, are not released from their responsibilities until all the wage agreements are put into effect.

The Geological Survey and the Council of National Defense will finish a few uncompleted portions of the commission's work. The commission's files go to the Interior Department, to be used in conjunction with the files of the Fuel Administration.

Trade Commission Proposes Changes in Coal Report Blanks

THE Federal Trade Commission has submitted to the National Coal Association certain proposed changes in its monthly report blanks. The changes relate principally to the items pertaining to depletion and depreciation. The idea is to make these items conform more closely to the form used by the Bureau of Internal Revenue. The Trade Commission suggests that representatives of the National Coal Association discuss the matter with its specialists. It has been referred to the cost accounting committee of the National Coal Association.

Secretaries Daniels and Payne to Examine Alaska Coal Situation

JOSEPHUS DANIELS, Secretary of the Navy, and John Barton Payne, Secretary of the Interior, will sail from Seattle July 8 to visit Alaska. While many features of the Alaskan situation are to be considered by Secretaries Daniels and Payne, the principal reason for the trip is to obtain first-hand information as to the coal situation. Appropriations aggregating \$1,225,000 now are available for coal development in Alaska. Of that amount, \$225,000 is set aside for a washery.

National Coal Association to Consider Statistical Program

RECOMMENDATIONS as to the future statistical program of the National Coal Association and the local associations will be submitted by the committee on statistics at the directors' meeting July 14. T. W. Guthrie is the chairman of the committee.

Cost of Coal Production in March

Federal Trade Commission Report for March, 1920, Shows Slight Drop in Cost Compared with February, Due to Greater Daily Output—Previous Figures on Increase Due to 14-Per Cent Advance to Miners Corrected

COSTS of producing bituminous coal in the many fields of the country are given for March, 1920, in the third monthly summary issued by the Federal Trade Commission. For 1,068 operators producing 16,097,642 net tons of coal in March, or about 35 per cent of the total estimated production in that

The average cost of production as reported by these 810 operators was \$2.32 per ton in March, \$2.40 in February, and \$2 in the calendar year 1918. The average realization per ton of product sold—\$2.58 in 1918, \$2.73 in February, 1920, and \$2.74 in March—did not increase in the same proportion as did cost, with the re-

TABLE I. FEBRUARY AND MARCH, 1920, SALES REALIZATIONS AND REPORTED F.O.B. MINE COSTS PER TON OF 1,068 IDENTICAL OPERATORS, BY GENERAL COMPETITIVE REGIONS

General Competitive Regions	No. of Operators	February, 1920					March, 1920					Decrease of Reported Cost in March from that in February	Increase of Output per Working Day in March over that in February
		Production (Tons)	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin	Production (Tons)	Average Days Worked	Sales Realization	Reported F.O.B. Mine Cost	Margin		
Central Competitive "Interstate"¹	301	6,014,071	16	\$2.46	\$2.15	\$0.31	7,029,635	17	\$2.46	\$2.10	\$0.36	\$0.05	2%
Eastern Adjacent²	300	2,343,636	15	2.66	2.48	.18	3,053,294	18	2.86	2.33	.53	.15	6
Western Adjacent³	95	1,092,672	23	2.90	2.56	.34	1,249,375	25	2.91	2.46	.45	.10	4
Southern Appalachian⁴	156	1,506,740	17	2.93	2.75	.18	1,706,699	19	2.94	2.66	.28	.09	3
Southwestern "Interstate"⁵	126	710,729	17	3.44	3.26	.18	804,965	19	3.38	3.09	.29	.17	5
Rocky Mountain⁶	90	2,107,108	21	2.97	2.57	.40	2,253,674	22	2.97	2.55	.42	.02	1
United States	1068	13,774,956	17	2.72	2.43	.29	16,097,642	19	2.76	2.34	.42	.09	4

¹ Includes all of Illinois, Indiana, Ohio and the Southwest District of Pennsylvania.

² Includes all of Maryland, West Virginia, Virginia and the Central District of Pennsylvania.

³ Includes all of Michigan, Iowa and District No. 1 of Kentucky.

⁴ Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.

⁵ Includes all of Missouri, Kansas, Arkansas, Oklahoma, and Texas.

⁶ Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

month, costs of production, compared with February, decreased an average of 9 cents per ton, or 4 per cent. This decrease is attributed to more steady operation of the mines in March, the average output per working day having been 5 per cent greater than in February.

Average realization on the coal produced by these same operators was \$2.76 per ton in March, compared with \$2.72 in February. The decrease of 9 cents per ton in cost of production and increase of 4 cents in price received resulted in an average increase of 13 cents per ton in the "margin" of the operators. The "margin" is the difference between cost at the mine and selling price, out of which the producer must pay selling expenses, interest, income and excess-profit taxes as well as other items.

Comparing the statistics for March with those for February, 1920, and for the year 1918, the report of the commission shows data compiled from the reports of 810 identical operators who produced nearly 14,000,000 net tons in March, or about 30 per cent of the total for the country.

sult that the "margin" decreased from a maximum of 58 cents in 1918 to 33 cents in February and 42 cents in March, 1920. The report also states "The average increase of reported f.o.b. mine cost for February, 1920, was 15 per cent over that for the year 1918, and for March was 12 per cent. This increase is attributable to two chief causes: (1) the higher wage scale put into effect in November, 1919, as a result of the Fuel Administrator's recommendation of 14 per cent increase in the wages of mining labor, and (2) in the case of February, 1920, the decrease in the production for that month from the average monthly production of 1918. While the cost in March, 1920, also increased over 1918 because of the November, 1919, wage scale, it did not increase so much over 1918 as in February, because the March production was only 1 per cent lower than the average monthly production of 1918. The changes in the supplies of general expense costs were of minor importance."

The commission discusses the effects of changes in the rate of production and of the wage advance made

TABLE II. DISTRIBUTION OF TOTAL REPORTED F.O.B. MINE COST INCREASES ACCORDING TO CHANGES IN PRODUCTION TONNAGE OF 810 OPERATORS IN FEBRUARY AND MARCH, 1920, FROM AVERAGE MONTHLY PRODUCTION FOR THE YEAR 1918

Change in Production from 1918 Average Monthly Production (Per Cent)	Number of Operators	February, 1920			Increase in Reported F.O.B. Mine Cost Over Year 1918 (Per Cent)	Number of Operators	March, 1920			Increase in Reported F.O.B. Mine Cost Over Year 1918 (Per Cent)
		Production Tons	Average Change Per Cent				Production Tons	Average Change Per Cent		
Decrease over 25.....	300	3,238,848	-37	\$0.44	22	192	1,135,117	-41	\$0.52	24
Decrease over 16-25.....	116	1,916,667	-20	.42	21	82	1,772,447	-21	.35	18
Decrease over 6-15.....	118	2,986,024	-11	.31	16	99	2,223,213	-10	.33	18
Decrease over 0-5.....	76	1,138,665	-1	.34	15	110	3,546,511	+ 1	.27	14
Increase over 0-5.....	64	1,148,305	+ 6	.19	9	88	1,804,981	+ 13	.20	9
Increase over 6-15.....	42	588,657	+ 22	.16	7	61	971,666	+ 21	.09	4
Increase over 16-25.....	94	953,562	+ 64	.05	2	178	2,529,427	+ 58	.06	3
Totals	810	11,970,728	-16	.32	15	810	13,993,362	- 1	.24	12

last winter, concluding that the 14 per cent increase in wages of mine labor of last November resulted in an increase in mining cost of from 27 to 30 cents per ton, or about 14 per cent. The report reads as follows:

"In order to throw light on the effect which a change in the production tonnage has in bringing about a change in costs, the following tabulation for the 810 identical operators shown above has been made. Taking their average monthly production during 1918 as a base, they have been grouped according to the relative decrease or increase in their production for February and March, 1920, and their total f.o.b. mine cost increases or decreases are thus shown in relation to changes in production. A 14-per cent increase over the wage scale in effect throughout 1918 was made in November, 1919, and was in general effect during the two months shown in the table below. The additional award by the United States Bituminous Coal Commission (which included the 14-per cent increase) did not go into effect until April 1, 1920. This table, as explained below, is compiled by a more detailed statistical method than was used for the corresponding table of the January and February bulletins and indicates a somewhat larger increase in cost due to the wage increase of November, 1919, than was estimated in the previous bulletins.

"In February, 1920, in the groups where tonnage decreased, costs increased though only in a rough proportion to the extent of decreasing tonnage; in groups showing an increase of production, costs decreased, though only roughly in proportion. The same holds true for March. For the total 810 operators the 11,970,728 tons produced in February, 1920, as compared with their average monthly production in 1918 (14,197,986 tons), represented a decrease of 16 per cent. In March, 1920, their corresponding average decrease in tonnage was only 1 per cent. In February, 1920, a short month, 68 per cent of the total output of the 810 operators showed a decrease of 6 per cent or over as compared with their monthly average for 1918, while in March only 37 per cent showed a similar decrease.

"The results of the new method, considering the number of operators involved, their tonnages, and the average per cent of change in production, indicate an increase in cost ranging from 27 to perhaps 30 cents per ton (instead of 20 cents to 23 cents, as previously estimated) as a result of the 14-per cent wage advance, which it should be noted is about one-half of the total wage advance (27 per cent) awarded by the U. S. Bituminous Coal Commission and put into effect on April 1, 1920."

New York Public Utilities Fear Coal Shortage

BECAUSE of the shortage of bituminous coal in the Eastern part of the country and particularly because of the small supplies now in the possession of the public utility corporations of New York City, Acting Public Service Commissioner Alfred M. Barrett is urging the return of Federal fuel control. Mr. Barrett fears that the present situation will become worse during the fall and that unless something drastic is done there is danger that the local transportation lines will have to close down.

Several conferences were held last week between Mr. Barrett and representatives of the various utility corporations regarding the coal shortage. Mr. Barrett telegraphed President Wilson on June 22 saying:

Street railroads, gas and electric utilities will either close down or seriously curtail service within a few days unless they can obtain bituminous coal. They are now down to a few days' supply and advise this commission that it is impossible to obtain enough coal to keep them going. To avert a public calamity such as would follow the paralysis of public utility service in the greatest city of America, this commission respectfully urges upon you the advisability of immediate action to give priority to such utilities in the matter of car assignment and to see to it that enough cars are immediately segregated for public utilities use and sent to the coal mines for immediate loading. Only prompt and decisive action of this kind will avert the calamity.

At the conference held that day J. W. Lieb, vice-president and general manager of the New York Edison Co., outlining the general situation, said that the coal reserves had been depleted to a point where only a few days' or a few weeks' supply was left. While the corporations have contracts very few of them are getting deliveries up to full contract requirements, and even where such deliveries are obtained the contracts do not cover more than 60 per cent of the coal requirements of the companies. He said the utilities have been supplementing their contracts by purchasing coal in the open market at prices ranging from \$15 to \$16 a ton. Even at these prices they find it difficult to get coal enough and have to bid against manufacturers and the general public. Mr. Lieb said that the New York Edison Co. had about 50,000 tons available when it should have at least 150,000 tons. It is using 25,000 tons a week.

Another conference followed in Washington the next day between Morgan T. Donnelly, Deputy Public Service Commissioner; James B. Walker, secretary of the commission, and representatives of the Interstate Commerce Commission, as the result of which assurances were given that no public utility would go without coal.

Another conference, this time attended by A. H. Smith, president of the New York Central Lines; Samuel Rea, president of the Pennsylvania Railroad Co.; W. G. Besler, president of the Central Railroad of New Jersey; Daniel Willard, president of the Baltimore & Ohio Railroad Co., and representatives of the public utilities and of the Public Service Commission, was held on June 25. Mr. Smith presided. Figures were presented by the utility corporations showing the exact amount of coal on hand and it was then stated by Mr. Lieb that the utilities had agreed among themselves to stand together and to lend power or coal, if necessary, to prevent the shutting down of operations by any one of them.

At the conclusion of the conference Acting Commissioner Barrett said that reports had been presented to him indicating that more than 1,400 cars of coal were tied up in New Jersey and Staten Island, and that some of this fuel probably was being held for a higher market. He stated that it was extremely difficult to establish a clean-cut case of coal profiteering which would warrant summary action at this time.

Mr. Barrett in urging the return of wartime control of coal said that the public utilities of this city have less than 50 per cent of their normal supply of coal on hand. He said that facts at the disposal of the commission indicate that the local situation will be materially aggravated during the fall unless radical measures are taken. It was expected, he said, that the Interstate Commerce Commission would issue an order placing New York on the same basis of priority as New England. On June 28 announcement was made that New York had been placed on the same basis as New England in the matter of priority.

New England Order a Mistake, Coal Men Believe

Requirement That Coal Be Unloaded Within 24 Hours,
They Think, Should Apply to All Freight
Carried in Open Tops

THAT the Interstate Commerce Commission made a serious mistake when it issued its Service Order No. 6, which gives preference and priority to shipments of coal destined to New England, is the impression among coal authorities. Had the commission issued only Order No. 7, which gives coal mines the first call on open-top cars, everything would have been accomplished which will be brought about by Order No. 6. Had the New England order been omitted, the extreme confusion which exists today could have been avoided, in the opinion of Washington representatives of the coal industry. Such a course, it is declared, would have been much more to the interests of the public, to the railroads and to the coal shippers.

The confusion under Order No. 6 is increasing and at this writing the Interstate Commerce Commission has not seen fit to interpret its New England order. Some carriers and receivers of coal contend that Order No. 6 gives assigned cars to those who will ship to New England in a manner exactly similar to that used by the carriers in obtaining railroad fuel. The question naturally is raised as to whether railroad assigned cars have preference over New England assigned cars.

Another question is whether coal shippers who have New England orders are permitted to have cars for shipments to inland customers, a public utility, for example. In such a case, the inland public utility company would be discriminated against in favor of a New England public utility.

While Order No. 7 is generally satisfactory to coal shippers, they cannot understand why that portion of the order which requires coal to be unloaded within twenty-four hours was not made to apply on all other commodities loaded in open-top cars. An open-top car can be loaded with automobiles and routed toward a coal field and then lie for an indefinite period under load at its destination while the consignee negotiates the financial arrangements to take over the automobiles. This example applies to the many other commodities which are being handled in open-top cars.

Objection is made to the New England order also on the ground that it places in new hands the power to say what coal may be exported and to what countries it may go. While everyone is in thorough sympathy with New England's desire to have an adequate amount of coal, there is emphatic opposition to any plan of rushing all this coal to that section in a few weeks. It is decidedly to the interest of the people of the United States that Cuba have enough coal to keep its sugar factories grinding and enough to insure its transportation to the seaboard.

Entirely apart from any selfish benefit which may be derived is the matter of interfering unnecessarily with the flow of coal to countries which are in the direst need of fuel. There is also demand that loadings for New England be limited to the amount that can be handled at New England ports. There also is a demand that steps be taken to prevent overstocking in New England. It will be recalled that under a previous priority order New England stored enough coal to last it half way

through the second winter. It is hard for road commissioners to understand why candy factories in New England should be allowed to pile up large stocks of coal when the cars used to haul this coal could have been used for road materials, thereby saving millions of dollars' worth of roads which are likely to be destroyed from lack of maintenance.

New England Has Five Weeks' Stocks of Bituminous Coal

AT THE request of the U. S. Bituminous Coal Commission, and largely with the help of funds provided by the commission, the Geological Survey is conducting a rapid canvass of stocks of coal in the hands of consumers. In order to get results quickly the inquiry was limited to a selected list of representative consumers, most of them large, including byproduct coke ovens, iron and steel plants, other industrials, gas and electric utilities, and retail coal dealers, scattered over the entire country. The stocks will be expressed in terms of weeks' supply for the companies reporting, and will then be comparable with other measurements of stocks made in the past by the Fuel Administration. Because of the present interest in the coal supply of New England the returns received up to noon of Wednesday, June 23, are given in the following tables:

STOCKS OF BITUMINOUS COAL ON HAND AT REPRESENTATIVE PLANTS IN NEW ENGLAND, FEB. 29 AND MAY 31, 1920 (NET TONS)

	On List	Number of Plants Reporting	Weekly Consumption March to May 1920 ^a	Tons on Hand		Weeks' Supply on Hand ^b	
				Feb. 29	May 31	Feb. 29	May 31
Coal gas plants:							
Total New England	17	16	13,276	100,798	61,857	7½	4½
Electric utilities:							
Total New England	34	33	34,225 ^c	135,312	199,830	3½	5½
Industrial consumers:							
Maine.....	27	21	13,861	83,577	90,154	6	6½
New Hampshire.....	39	33	5,587	38,179	27,313	6½	4½
Vermont.....	45	34	1,925 ^d	13,597	12,451	7	6½
Massachusetts.....	316	235	41,543	270,160	229,209	6½	5½
Rhode Island.....	45	31	6,851	43,085	39,692	6½	5½
Connecticut.....	90	68	17,843	119,233	82,833	6½	4½
Total New England..	562	422	87,610	567,831	481,652	6½	5½

(a) Includes yard losses, shrinkage, etc.

(b) On basis of average consumption, March, April and May, 1920.

(c) Average weekly rate for an entire year.

(d) Excludes steel and by-product plants.

STOCKS OF BITUMINOUS AND ANTHRACITE COAL IN HANDS OF RETAIL COAL DEALERS IN NEW ENGLAND, FEB. 29 AND MAY 31, 1920 (NET TONS)

	On List	Number of Dealers Reporting	Average Weekly Deliveries March, April, May, 1920 ^(a)	Tons on Hand		Weeks' Supply on Hand ^b	
				Feb. 29	May 31	Feb. 29	May 31
Anthracite:							
Maine.....	15	8	1,352	2,881	7,623	2	5½
New Hampshire.....	14	10	1,856	5,152	8,521	2½	4½
Vermont.....	9	5	1,479	2,483	6,526	1½	4½
Massachusetts.....	72	49	38,980	169,980	121,652	4½	3
Rhode Island.....	13	11	5,398	22,952	17,025	4½	3½
Connecticut.....	32	23	6,959	38,975	13,485	5½	1½
Total New England	155	106	56,024	242,423	174,832	4½	3
Bituminous:							
Maine.....	15	8	2,869	9,337	6,161	3½	2½
New Hampshire.....	14	10	881	861	2,585	½	2½
Vermont.....	9	5	523	602	510	1½	½
Massachusetts.....	72	49	30,382	56,015	37,939	1½	1½
Rhode Island.....	13	11	16,727	16,964	17,766	1	1
Connecticut.....	32	23	3,580	11,426	5,083	3½	1½
Total New England..	155	106	54,962	95,205	70,044	1½	1½

(a) Includes yard losses, shrinkage, etc.

(b) On basis of average deliveries March, April and May, 1920.

Commission Defines Use of Assigned Cars

UNLESS an operator contracts with a railroad for a season's output, it is not proper for the railroad to take coal in assigned cars without charging those cars to the mine in its regular allotment, according to the opinion of Chairman Clark of the Interstate Commerce Commission, as given in a letter recently to J. V. Norman, of the West Kentucky Coal Bureau. On June 15 Mr. Norman wrote to Mr. Clark requesting an interpretation of the assigned-car order, as follows:

Much confusion apparently exists as to the length of time for which carriers must take the output of a mine in order that such mine may be considered an output mine, and cars assigned to it not be counted. In the decisions of the commission which are referred to in the commission's recent order it was held that the output must be taken for such reasonable time as would remove the mine from commercial competition with other mines. Prior to Federal control it was generally understood, in our section of the country at least, that the output must be taken for a period of a year in order to bring the mine within the rule which permitted cars assigned to it to be eliminated from the count.

Under your recent order the carriers have placed various limitations upon the time for which the output must be taken and some of them are asserting the right to take the output for one day only, and not count the cars furnished on such day. Of course, where this is done the mine comes immediately back into commercial competition, and if the mine is given 100-per cent supply of cars every third or fourth day and the cars are not counted against it, its cost of production is so reduced as to give a very great commercial advantage over other mines not so favored and which are running only 40 to 50 per cent time. I understand that other carriers are putting a more reasonable construction on the rule.

It is my understanding that the recent order of the commission as to assigned cars was issued in the exercise of its emergency powers to control and distribute cars, and, in view of the varying interpretations placed upon this order by carriers, I wish to ask if it is not possible for the commission, in connection with this emergency power, to prescribe a minimum time for which the output of a given mine must be taken in order that cars assigned to it be not counted.

The reply of Chairman Clark clearly defines the practice now being followed on some roads as illegal. Mr. Clark's letter is as follows:

I have your letter of the 15th inst., reciting that some carriers are interpreting the commission's order and holding as to use of assigned cars as permitting them to take the entire output of a mine for one day or for a few days and putting it back on the commercial basis for succeeding days.

This same question came up in 1916 in connection with the Illinois Central R.R. At that time I wrote the president of the Taylor Coal Co. of Chicago, as follows:

"I think the inquiry contained in your letter of the 13th inst. is fully answered in the text of the report of the commission in Traer vs. C. & A. R.R. 13 I.C.C., 451, special reference being had to what is said regarding counting of cars used for transportation of the carrier's own fuel supply on pages 457, 458 and 459. Incidentally I remark that this decision was sustained by the Supreme Court of the United States in Interstate Commerce Commission vs. I.C.R.R. Co., 215 U. S., 452.

"In the decision to which you refer, in re irregularities in mine ratings, 25 I.C.C., 286, we reaffirmed, at page 297, the holding above referred to.

"The decision in the Traer case clearly points out that where the carrier purchases a portion of the output of a mine which is competing with other mines on its lines in commercial markets, it may not discriminate in favor of such mine by failing to count against it in the distribution of cars those cars which it furnishes to that mine for its own fuel. It seems to me obvious that the carrier may no more discriminate by taking the entire output of a mine one day and leaving the mine on a commercial basis the next day, and not counting its own fuel cars against the mine, than it can unjustly discriminate by taking a portion of the output each day or each alternate day. The carrier does not, in my judgment, take the entire output of a mine unless it takes the entire output for a season, or at least for a substantial period, during which that mine is not engaged in producing coal which is in competition commercially with that produced by other mines on the same line."

That apparently disposed of the question. I assume that now repeating, with approval of the commission, what I then said will suffice in the instance to which you refer.

Tidewater Shipments During May

COAL movement to tidewater during May as reported by the railroads was 4,436,000 net tons, the largest since October, 1919, and one of the largest on record. Shipments to New England were 776,000 net tons, an increase of 59,000 tons over the preceding week. Exports overseas increased by 39,000 tons, reaching a total of 1,942,000 net tons.

Port	New England Shipments (Net Tons)	Exports (Net Tons)	Total dumped at Tide (Net Tons)
New York.....	109,000		999,000
Philadelphia.....	132,000	219,000	586,000
Baltimore.....	52,000	518,000	761,000
Hampton Roads.....	483,000	1,120,000	1,986,000
Charleston.....		85,000	104,000
Totals.....	776,000	1,942,000	4,436,000

Bituminous Coal Loaded Into Vessels at Lake Ports, as Dumped by Docks, for Season to End of May

(IN NET TONS)

Statistics Compiled by the Ore and Coal Exchange, H. M. Griggs, Manager

Ports	Railroads	1920			1919			1918		
		Cargo	Fuel	Total	Cargo	Fuel	Total	Cargo	Fuel	Total
Toledo.....	Hocking Valley.....	126,136	1,859	127,995	979,882	29,459	1,009,341	591,858	15,696	607,554
	Toledo & Ohio Central.....	68,825	4,956	73,781	219,262	6,036	225,298	326,649	10,429	337,078
Sandusky.....	Baltimore & Ohio.....	101,844	10,270	112,114	242,199	5,293	247,492	261,325	5,204	266,529
	Pennsylvania.....	64,544	995	65,539	312,597	8,919	321,516	338,575	8,119	346,694
Huron.....	Wheeling & Lake Erie.....	301,890	25,451	327,341	396,647	12,442	409,089	353,047	13,920	366,967
Lorain.....	Baltimore & Ohio.....	387,512	43,496	431,008	647,912	33,654	681,566	452,820	14,044	466,864
Cleveland.....	Pennsylvania.....	38,664	6,522	45,186	458,111	60,129	518,240	377,512	48,849	426,361
	Erie.....							168,097	4,938	173,035
Fairport.....	Baltimore & Ohio.....				10,956	10,022	20,978		5,630	5,630
Ashtabula.....	New York Central.....	48,660	21,415	70,075	455,339	26,711	482,050	271,666	33,190	304,856
	Pennsylvania.....	51,344	16,138	67,482	476,938	16,364	493,302	242,031	10,550	252,581
Conneaut.....	Bessemer & Lake Erie.....	299,800	9,360	309,160	318,868	919	319,787	418,018	6,464	424,482
Erie.....	Pennsylvania—West.....	680		680	155,144	7,959	163,103	101,094	5,519	106,613
	Pennsylvania—East.....	7,405	12,456	19,861	40,179	2,099	42,278			
Totals.....		1,497,304	152,918	1,650,222	4,714,034	220,006	4,934,040	3,902,692	182,552	4,085,244

Oklahoma First-Aid Meet Introduces Good System of Judging

A Commission of Medical Men Judge All the Final Dressings After Separate Judges for Each Team Have Watched the Several Operating Stages

THE Sixth Annual Oklahoma State First-Aid Contest and Field Meet was held in Chadwick Park, McAlester, Okla., at 2 p.m., May 31, 1920, under the auspices of United Mine Workers of America, District 21; the McAlester Commercial, Rotary and Lion's Clubs, city officials and the U. S. Bureau of Mines.

WORK OF FIRST-AID TEAMS SURPRISES

The spectators numbered some three thousand persons. The work of each of the eleven first-aid teams that participated was surprisingly good. The day was concluded with athletics and baseball. Music was afforded by a mine band and a prize was given to the oldest active miner present. At 9 p.m. the McAlester Commercial Club served a 250-plate banquet at the Busby Hotel to all the contestants and their lady friends. The winners were as follows:

Contestants	Percentage
Hailey-Ola Coal Co., Haileyville, Okla.	100.00
Rock Island Coal Mining Co., Alderson, Okla.	98.60
Samples Coal Mining Co., North McAlester, Okla.	98.30
Whitehead Coal Mining Co., Mine No. 4, Schuler, Okla.	96.60
Southern Fuel Co., Brewer, Okla.	96.50
Rock Island Coal Mining Co., Gowen, Okla.	94.60
Consolidated Fuel Co., Coalton, Okla.	92.60
Folsom-Morris Coal Mining Co., Lehigh, Okla.	91.60
Creek Coal Mining Co., Creek No. 1, Okla.	85.60
Whitehead Coal Mining Co., Henryetta, Okla.	84.30
Coal Department, Michigan, Kansas & Topeka R.R., Colgate, Okla.	66.60

A new system of judging first-aid contests was tried and proved highly satisfactory. All the teams that participated were outspoken in endorsing the new system. Everyone who has conducted first-aid contests realizes that the old system of judging has been the weak part of all first-aid contests, for in state and national competitive tests the best teams have not always won, for some judges are exacting, while others are exceedingly lax. This has caused much ill-feeling and has greatly hindered the work, and if any one thing will ever prevent the holding of first-aid contests, which are undoubtedly the best means of stimulating first-aid work, it will be inefficient judging.

COMPETITORS SATISFIED WITH DECISIONS

The system employed at McAlester was as follows: One doctor was placed at each team. He was instructed to observe the work as it was performed. The duty of this judge was to see that the members of the team did the most important thing first, also to observe whether they handled the patient awkwardly, whether they were slow in their work or showed lack of attention, whether they used improper treatment or failed to be aseptic, etc.

In addition to this a commission composed of five doctors who were specially fitted by training and experience for judging first-aid contests examined and passed judgment on all teams in every event. This commission carefully examined every dressing and questioned the judge of each team regarding the methods used and the manner in which each team performed its work. Then the team judge and commission marked and signed the discount sheet and passed it on to the recorders. Without a single exception, every team on the field was entirely satisfied with the decisions handed down by the team judge and commission.

Coal Age suggested many years ago the separation of the judgment on action from the judgment on the completed work, believing that this might make it possible to get the necessary judging force, doctors serving for the final inspection and qualified first-aid men watching the action of the men.

Mine Inspectors' Institute of America Announces Eleventh Annual Meeting

BY JAMES W. PAUL*

ALL mine inspectors of the United States and Canada will be interested to know that the eleventh annual meeting of this institute will be held in Cleveland, Ohio, at the Statler Hotel, July 13, 14 and 15. All state and county mine inspectors in the United States, and all provincial inspectors in Canada are requested and urged to attend.

The business of the meeting will be in the nature of a conference on a number of important subjects of special interest to mine inspectors. Of special importance are the following: "Standardization of Electric Code for Mines"; "Standardization of Inspection Routine"; Standard Requirements for Mine Ventilation"; "Methods for Sealing Abandoned Workings." Come prepared to discuss these and any other questions you may care to present.

If you are not a member of the institute your application for membership can be made at the meeting. The dues are only \$5 per year and there is no initiation charge. If you were a member in 1916 you should send the Secretary \$5 to cover 1919-1920 dues, or bring it to the meeting.

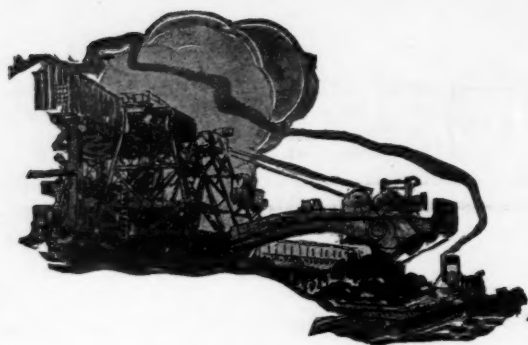
At the last meeting of the Institute, held in Indianapolis, July, 1919, the officers then in office were, by resolution, continued for another year. Owing to the war, there were no meetings in 1917 or 1918. For this reason, the institute adopted a resolution to the effect that no dues would be required of the members for those two years, and that all members who were in good standing in 1916, would be continued as members upon their paying the 1919-1920 dues.

The funds of the Institute have been insufficient to get out the regular proceedings for the last (1919) meeting; but with the payment of dues for 1919-1920, there will be sufficient funds to get out an abbreviated printed report that may be consolidated with the proceedings for the 1920 meeting.

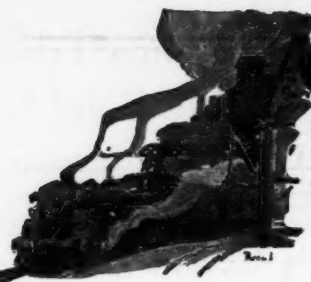
*Secretary Mine Inspectors' Institute of America, 4800 Forbes St., Pittsburgh, Pa.

Indiana Strip-Pit Contracts Completed

CONTRACTS for the next two years between strip-pit coal miners and operators in Indiana have been adopted and put in the hands of a committee in charge of printing and distribution. The new contracts are similar to the old, with the exception of a few slight changes and clauses clearing up points which, it was feared, might later cause controversies. Those representing the miners were Edward Stewart, president of District No. 11; William Mitch, secretary-treasurer; William Ferrell and Charlie Kibbons, representing the miners, and Michael Schollard, B. E. Lundblad, W. H. Robinson, I. W. Aten and Frank Richards, for the operators.



Production and the Market



Weekly Review

Production Declines After Four Weeks of Steady Climb—New York Public Utilities Appeal to Government for Coal—Canada Is in Difficulties Over Fuel Supply—Michigan Embargoed Against Western Coal—Anthracite Output Affected by Switchmen's Strike

FROM nearly every section of the country comes further word of the increasing acuteness of the coal situation. New England has just pleaded for and obtained a priority order, although figures just released by the Geological Survey show a comfortable stock of coal there for immediate needs. New York public utilities likewise pressed their needs before the government and arranged to pool both coal and power should necessity arise. Shortly thereafter the Interstate Commerce Commission modified order No. 6, giving New York equality with New England.

A car shortage in Alabama, the like of which was unknown even during the war, is interfering with production and is raising prices. The Kansas Court of Industrial Relations is preparing a report on the coal situation and is advising everybody to buy and store now, which can be done in that section today.

Michigan has been embargoed against coal from Illinois and Indiana, and Chicago likewise is frequently so congested that coal from the nearby fields has to be

embargoed. Throughout the Middle West anthracite has been in short supply and the present condition of the roads does not promise much improvement soon.

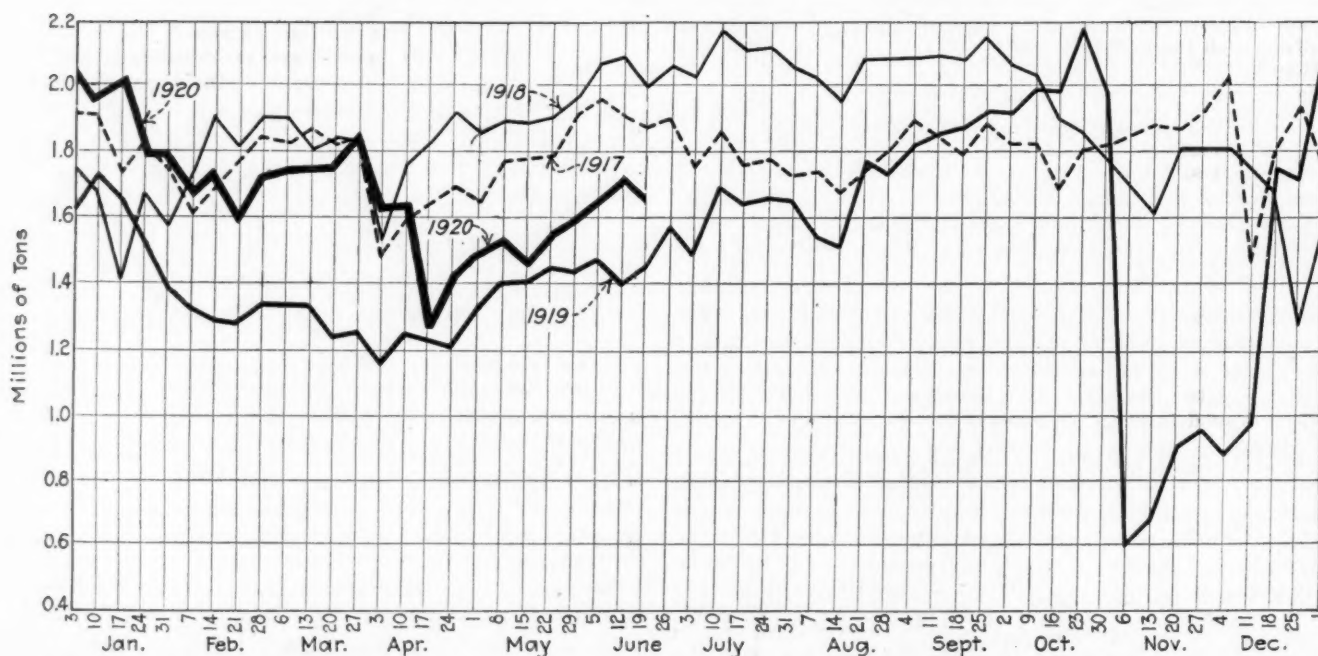
In two fields prices are reported to have begun to drop. Pittsburgh and Fairmont both report that the recent order virtually embargoing exports has had a tendency to soften prices, in the Fairmont field because of an embargo declared by the Baltimore & Ohio. Coal exports have ceased from northwestern Kentucky and buyers are reported no longer to be seeking coal in Ohio for export.

Lake Coal Dumped Season to June 26

(NET TONS)

	Cargo	Fuel	Total
1919.....	8,164,200	369,800	8,534,000
1920.....	3,052,240	277,280	3,329,520

Average Daily Production of Bituminous Coal*



* From weekly report of Geological Survey.

Reports From the Market Centers

New England

BOSTON

Questions Are Raised as to Priority Order for New England—Market Is Practically Unchanged—Hampton Roads Loading Is Slow—Anthracite Car Supply Is Curtailed.

Bituminous—The Interstate Commerce Commission issued an order, effective June 24, calling for priority for cars bearing coal destined (via Tidewater piers) for New England points in the name of J. J. Storrow, for the relief of the railroads and industries in this section. The interesting question at once arises—Where is he to get the coal?

Further, the railroads themselves are none too certain that they will not lay themselves open to heavy damages for discrimination. Neither has any way yet been devised to allow coal to run in Mr. Storrow's name and at the same time free him from any financial responsibility.

The market generally continues extremely active for spot coal. Consumers here are getting quite anxious over the serious situation of the railroads and a large number of manufacturers and utilities are subsisting upon extremely narrow margins of supply.

The New Haven road, in particular, continues in bad shape and seizures of coal in transit continue unabated. There is no let-up in demand in any direction and diligent inquiry fails to show any effect upon the general situation by the Interstate Commerce Commission's order.

There is congestion at certain of the gateways, but in the main the rate of movement shows a distinct gain. Cars are coming through in less time than for several months. Outlaw strikes that have practically paralyzed the piers at Philadelphia and certain of the loading ports at New York have spread to New Haven, Conn., and to the Mechanicsville yard of the Boston & Maine.

At Hampton Roads loading has slowed up to a marked degree. Steamers have been detained from a week to ten days and two weeks while heavy demurrage charges accrued. Buyers here are eager to absorb any such items so long as they can be assured coal.

Permits are being granted regularly for export, else the piers would not be in position to work. People talk about the number of bottoms that can be placed at the disposal of New England consumers, but no suggestion is advanced to solve the practical difficulty of getting them loaded.

Current prices of bituminous range about as follows:

	Clearfields	Cambrias and Somersets
F. o. b. mines, net tons,....	\$10@ \$11.25	\$10.50@ \$11.50
F. o. b. Philadelphia.....	13.10@ 14.50	13.60@ 14.85
F. o. b. New York.....	13.50@ 14.85	14.00@ 15.10

Clearfields have sold at \$16@ \$18 f. o. b. Boston, gross tons.

Anthracite—Just at the time the movement of domestic sizes was showing a marked change for the better, came the suspension of work at the New York and Philadelphia piers. Likewise, the railroads have been directed to curtail car-supply for anthracite, on the ground that the supply of the latter is "easy." Thus collieries are obliged to shut down from lack of cars in June and time will have to be made up in October.

The Boston & Maine continues embargoes against shipments off the N. Y. C. and effective June 24 the Boston & Albany declined to accept freight marked for B. & M. or N. Y., N. H. & H. destinations via that line. This leaves only the B. & A. open and that only for stations on its own line. That being the case, the spot market is next to impossible to serve, although it is the expectation that the B. & M. embargo will be lifted within a few days.

Tidewater

PHILADELPHIA

Anthracite Trade in City Is Halted by Strike—Embargo Prevents Delivery of Coal—Mines Face Shut Down, as Empty Cars Fail To Arrive—Steam Coals Are Moved to Essential Industries—Bituminous Situation Is Most Serious, with Little Tonnage Coming In—Consumers Appeal to Governor Sproul.

Anthracite—The new outlaw strike of freight crews which broke suddenly on the lines of railroads entering this city on June 19 has come close to crippling the anthracite trade. The railroads found it necessary to embargo all shipments of anthracite into the city, and it has not been raised. As a result, no shipments of anthracite domestic sizes have reached the city for a week.

When the trouble began local dealers had quite small supplies on hand and now most of the yards are cleaned out.

At this time it is quite apparent that the mines will have to shut down, as the strike movement has gradually moved northward over the lines, until it has reached the mining regions, where crews operating the scale yards have left their posts. The collieries are faced

with a scarcity of empties, as the roads have been unable to send the cars back to the mines.

Despite the scarcity of coal there has been no increase in prices and embargoes face the shippers in all directions.

There is a most urgent demand for all sizes of steam coal, with buckwheat in the lead. The railroads have endeavored to move steam sizes to the essential industries which are running on extremely close margins.

Bituminous—The bituminous situation is even more serious than the anthracite. Very little, if any, new tonnage is coming in. Brokers continue to offer small lots of fuel, the price depending upon the urgency of the buyer. Some sales have been made as high as \$13 a ton for coal at the mines, although for the most part they have been closer to the \$11 mark. These prices are all irrespective of grade.

The trade in general, including both shipper and consumer, has been quite wrought up over the preferential order granted by the Interstate Commerce Commission to New England interests. The various trade boards in this city and outlying sections are working strenuously to have it rescinded.

The manufacturing interests represented to Governor Sproul that the situation was fast assuming a phase where it would soon necessitate a calling of a special session of the Legislature to meet a crisis.

Numerous industrial plants are closed down and other industrial and utility plants threaten to do so before they will pay more than the contract price for fuel. Many of them have also taken exception to the increasing export trade and ask that it be at least restricted.

Fortunately the mines generally have reported a considerable improvement in the car supply, although even this is sporadic.

At tide an extremely large number of vessels are on demurrage awaiting the loading of their cargoes. The amount of coal now standing at tide is sufficient to meet the needs of vessels but due to the rail strike the movement of cars through the yards has been impeded and vessels consequently delayed.

NEW YORK

Anthracite Moves Easier Here, but Production Is Uncertain—Retailers Lack Supplies—Disturbed Bituminous Situation Brings Conferences and Improved Understanding—High Prices Are Deplored.

Anthracite—The anthracite market has not so far been affected by the newspaper agitation that there is likely to be a fuel famine here next winter.

It is generally understood that the present unrest is attributed to the lack of bituminous and not of anthracite.

Conditions fail to show any improvement unless it be in the easier movement of coal from the docks.

Production was hard hit in some sections of the coal fields last week. Nearly

all producers complained of the lack of cars, which they fear will do more to create restlessness among their workers than anything else, including the non-existence of a wage agreement.

Coal movement in this vicinity has improved but the dealers are receiving hardly more than 50 per cent of their normal requirements. Many of the smaller yards are bare of coal while some of the larger dealers are frequently without one or another of the larger sizes. However, considerable coal has already been placed in consumers' bins.

No official announcement was forthcoming early this week regarding the possible adding of 10c per ton to the June prices of domestic coals to become effective July 1. Quotations for the domestic sizes of independent mines ranged as high as \$10.50 at the mines.

There was an active market for the steam sizes, although there were no heavy tonnages available. Independent buckwheat was quoted at from \$4.25 to \$4.75; rice \$3.25 to \$3.75 and barley around \$2, all at the mines.

Current quotations for company coals, per gross ton, at the mine and f.o.b. New York Tidewater, at the lower ports, are as follows:

	Mine	Tidewater
Broken.....	\$7.30—\$7.50	\$9.15—\$9.35
Egg.....	7.30—7.45	9.15—9.30
Stove.....	7.55—7.80	9.40—9.65
Chestnut.....	7.60—7.80	9.45—9.65
Pea.....	5.85—6.25	7.60—8.00
Buckwheat.....	4.00—4.10	5.75—5.85
Rice.....	3.00—3.50	4.75—5.25
Barley.....	2.25—2.50	4.00—4.25
Boiler.....	2.50	4.25

Quotations for the domestic coals at the upper ports are generally 5c higher on account of the difference in freight rates.

Bituminous—Many conferences, followed in some instances by orders, and considerable agitation by the public press have tended to cause considerable uneasiness in this market. There was a slow movement of coal in New York harbor. Numerous conferences with the Interstate Commerce Commission brought about the understanding that there would be no need for further alarm, even should it become necessary to issue priority orders.

Inland dealers were in much better shape than those dependent upon water deliveries. Many of the former are well supplied and are not inclined to add to their present stocks unless there is a drop in prices.

Representatives of the various public utilities are complaining of the high prices they are obliged to pay for free coal.

Delay in bunkering vessels frequently postpones sailings here while ship captains from European ports are late in arriving because of the poor quality of coal furnished them on the other side.

The railroads continue to seize coal in large quantities, frequently causing distress to the consumers to whom it was consigned.

There are not as many loaded boats here as there was a week ago and owners find no trouble in disposing of them

at prices ranging up to \$14. Quotations at the mines were heard as high as \$9.50 for the good grades.

BALTIMORE

New England Priority Causes Serious Situation Here—Fancy Prices Are Paid for Coal—Anthracite Runs Short and Supplies Are Bought Up by Industries Here.

Bituminous—The rail strike on top of the generally confused transportation problem placed the trade in a trying position. Many consumers are now desperately short of coal. With priority movement to New England, with grants of coal to some western points and with only coal allowed shipment east to public utilities and hospitals, and with the railroads this time not aiding local plants with fuel coal, the situation is indeed serious.

Many plants here are now on the verge of a curtailment unless relief comes, as the long weeks of inadequate supply had left them practically without coal. Fuel has been bought up right and left here at almost any price, the mine basis rate of \$11 to \$12 a net ton being paid frequently for small lots available in this city. In some cases there has been failure to deliver the coal thus bought, on account of labor troubles.

Many shippers with coal at the mines, or even at tide here, and who are not allowed to dispose of the fuel except to public utilities, have been offering the fuel to such purchasers as low as \$8 a net ton f.o.b. mine basis. Many shippers here complain that New England was given priority, when the Lakes and the East generally are just as much in need of fuel.

The Baltimore & Ohio has been reporting a daily loading of between 2,000 and 2,500 cars for some weeks past. But the reserve of cars at Curtis Bay has now been cut to around 1,200, while there are only a few cars left at the Canton pier of the Pennsylvania. Nearly 40 ships are now waiting astream here in vain for coal.

Anthracite—The hard coal reserve here has been almost wiped out, and at this writing it is doubtful if there is 5,000 tons of anthracite in all the coal yards of the city. And to this is added the fact that some firms still have April orders to fill, while at this time last year nearly two-thirds of cellar supplies had been put in.

Last week there was a complete embargo against all hard coal shipment here, and even coal running was re-routed. Hot complaints were registered and promise of relief was given. A better run is now being started it is reported.

Meanwhile some industries without soft coal have been gunning for anthracite, and have bought up wherever the coal men would release to them. All of which means additional replacement to tide for householders here next fall and winter. Can it be done? The trade is very doubtful.

Lake

BUFFALO

Bituminous Situation Does Not Improve—Demand Is Not Insistent—Anthracite Supply Is Large With Canadian Buyers Crowding the Market—Good Lake Movement—Little Change Noticed in Coke.

Bituminous—The situation does not improve. Matters seem to become more mixed and tangled instead of straightening out. Transportation seems to be the main difficulty. Shippers are taking care of the most needy consumers first. The railroads are given the preference and then public utilities are looked after. Buffalo has a car committee which gives a large amount of time to such work, but it is an uphill task at best.

Increase the car supply 50 per cent and the \$10 maximum price would go down to \$4. As it is there is no settled price. Most coal goes on contract at about \$3.50 at the mines. The bituminous demand is not insistent, in spite of the small amount in consumers' hands, for they know that a fair car supply would cut prices in half. Jobbers are between the two extremes and are faring badly.

Anthracite—The local supply is quite large and in it lies the hope that the winter will not exhaust the supply.

Canada is calling for more anthracite; that may indicate either an actual shortage for the time of year, or it may merely mean that consumers are eager to get what they can now and make sure of it. This market is flooded with Canadian dealers. Whether they get more for the effort is not very likely, for the shippers have now so long systematically routed their coal, in order to cover the field as best they can, that any great deviation from it would create a serious shortage somewhere.

The Lake movement is good, being for the week 124,800 net tons, of which 38,600 tons cleared for Chicago, 30,800 tons for Duluth-Superior, 29,900 tons for Milwaukee, 11,500 tons for Fort William, 7,500 tons for Ashland and 6,500 tons for Sheboygan.

Freight rates continue at 65c. to Chicago, 60c. to Milwaukee, 55c. to Sheboygan and 50c. to Duluth, Fort William and Ashland.

Coke—The movement by single order is exceedingly small, nobody buying unless an unexpected shortage takes place, all depending on contracts, made at less than half the current variable price. The latest quotation obtained by local jobbers was \$17.50 for 72-hr. foundry, at the ovens, and about \$1.50 less for furnace, with no domestic sizes or breeze offering. To this must be added \$2.60 freight for local prices.

It is reported that more than 100 vessels are tied up at Erie and Ohio ports waiting to unload, some losing more than a week on a single trip.

Inland West

MIDWEST REVIEW

Coal Becomes More Scarce and Prices Rise—I. C. C. Is Asked To Grant Increased Freight Rates to Railroads—Open Tops Are To Be Used Only for Coal—Transportation Difficulties Must Be Solved by I. C. C.

Coal is becoming more scarce and harder to purchase every day. The market, consequently, has responded and prices uniformly are at a higher level than heretofore. Indiana and Illinois coals that have been selling on the open market during the past few weeks at \$5 to \$6 per ton, f.o.b. mines, are now moving at prices ranging from \$5.50 to \$6.50 and sometimes higher. Steam sizes, as well as the domestic grades, are rising in value, and screenings, in many cases, are bringing as good prices as either mine-run or lump.

The retail dealers of the Middle West are now pretty thoroughly aroused over the coal problems. The Interstate Commerce Commission has been urged to grant increased freight rates to railroads, so that the roads may be able to keep up their equipment and purchase additional rolling stock.

On June 21 the Commission of Car Service published an important ruling. This order provides that all open-top cars east of the Mississippi River are to be used only for coal purposes during a period of 30 days. Those interested in the coal industry feel that this order will help to alleviate the present acute coal shortage.

In the Middle West the public is beginning to realize that the only relief to be looked for in this coal crisis will have to come through the solution of the transportation difficulties, and the Interstate Commerce Commission appears to be the only body having authority to handle the situation.

It is sincerely hoped that some relief measures will be undertaken immediately, because if relief is not speedily brought it will mean not only the crippling of industry but actual want and suffering next winter.

CHICAGO

There Is a Serious Shortage of Coal Here—Publicity Campaign May Be Started To Show Up the Facts About the Coal Industry—Railroads Serving Chicago Have Placed Embargoes—Market and Prices Hold Strong.

The coal question once more occupies a prominent position on the front pages of the local daily papers. The city pretty thoroughly understands that there is a most serious shortage of coal, but does not quite know why this condition exists. It is quite widely thought that the coal men ought to undertake an extensive publicity campaign to acquaint the public with the problems confronting the coal industry.

Coal men are openly branded as profiteers, because the price of coal has advanced through the car shortage at the mines. It is to be hoped that some or all of our coal associations—producers and wholesalers—will get together and start a campaign, because such a step is quite necessary.

During the week the railroads serving the Chicago territory have placed a number of embargoes. For instance, it is said that neither Indiana nor Illinois coals can go into Michigan until further notice. In addition, there are some coal embargoes against Chicago.

The Chicago market is holding uniformly strong with advances in price for some coals, and reductions in price on none.

COLUMBUS

Ohio Operators Are Disturbed Over Present Transportation Situation—Assigned Cars Greatly Complicate Matters—Protests Are Filed—Fuel Demand Is Strong.

With reports from the East that the railroad strike is spreading and with many cities embargoes against, all classes of freight, including coal, Ohio operators are more uncertain over the outcome of the present mixup than ever.

In the meantime many large users of fuel are coming into the market and bidding almost any price to get the coal they need to keep their plants in operation.

Older operators who know the danger of a runaway market are asking only \$4.50 a ton for lump or mine-run at their Hocking Valley mines. Others are asking as high as \$9 and \$10 a ton. Fears that there may be an investigation of alleged profiteering seem to have a deterring effect upon others who keep the price within bounds.

The whole coal industry is at the mercy of the railroads. The delivery of great numbers of assigned cars into the Ohio fields, for the exclusive loading of railroad fuel, has complicated the situation.

At the meeting of the Southern Ohio Coal Exchange this week, continued protests were filed with officials at Washington against the assigned cars, but as yet there is no relief from that condition.

With indications that there will be a scarcity of natural gas throughout central Ohio during the coming winter, the domestic demand for coal is increasing and Hocking mine-run and lump retails at \$8.50 to \$9, while West Virginia splint ranges about \$1 higher. Pocahontas sells at retail from \$10.50 to \$11.50 and very little is to be had even at that price.

Hocking lump.....	\$4.50 to \$6.75
Hocking mine-run.....	4.50 to 6.50
Hocking screenings.....	4.50 to 6.50
West Virginia splints, lump.....	5.75 to 8.25
West Virginia splints, mine-run.....	5.50 to 8.00
West Virginia splints, screenings.....	5.50 to 8.00
Pocahontas lump.....	7.00 to 8.25
Pocahontas mine-run.....	7.00 to 8.25
Pocahontas screenings.....	6.75 to 8.00
Pomeroy lump.....	5.00 to 7.75
Pomeroy mine-run.....	5.00 to 7.75

MILWAUKEE

Many Public Officials Are Making Efforts To Loosen Up Transportation Conditions—Supply and Price of Soft Coal Are Investigated—Anthracite and Pocahontas Advance.

The future of the coal supply is uppermost in public attention hereabouts at the present time. Governor Philipp has appealed to Attorney-General Palmer to give his attention to the car-supply end of the coal dilemma, and Washington officials generally are being urged to lend a hand in the effort to start things in connection with the coal supply.

While the matter of supply is first in order, some attention is being paid to prices of coal for present use. A member of the Wisconsin Railway Commission is now in Illinois investigating conditions affecting both the supply and price of soft coal. Public utilities, particularly the gas companies, are greatly disturbed at the outlook and are clamoring for relief.

Although no new schedule has been announced since April, coal has been quietly advanced. Anthracite stove and nut now sell for \$14.75, egg at \$14.60, pea at \$13.10 and buckwheat at \$11.50. Steam Pocahontas retails at \$13.75 and mine-run is quoted at \$11.75, although there is none of the latter to be had.

Anthracite prices will be subject to another advance of 10c per ton on July 1. Soft coal generally is being sold at an advance, but price regulation is seemingly not being enforced. Dealers are in the dark as to the future of prices and dockmen refuse to make contracts for future delivery.

Receipts up to this writing by Lake aggregate 249,571 tons of anthracite and 291,235 tons of soft coal. Last year's record to date was 231,896 tons of anthracite and 1,144,308 tons of soft coal.

CINCINNATI

Car Shortage Is Still Serious, and Prices Have Increased—Cincinnati Is Favored by River Transportation—Fair Price Commission Inquires Into Rising Costs.

The average daily car supply at the mines is about 39 per cent, with more than a normal demand; only 50 per cent of the amount of coal that went to Tidewater last year has gone there this year to date. This is the situation that has been pointed out to coal users in this section and dealers report that it is beginning to bear fruit.

Dealers have been telling the coal-buying public that Cincinnati has been enjoying a very low rate for her fuel in comparison to the prices in other cities. The local dealers say that the same grade of coal that is being sold here demands from \$2 to \$3 a ton more in other cities.

By using the Ohio River, Cincinnati dealers have been able to get coal. A campaign was waged through the daily press during June advising the purchase of coal as prices would soon advance.

During the past week the Fair Price Commission made an inquiry to determine the causes of rising costs. Shortage of cars is one cause contributing to high prices. Agents for foreign countries are buying up coal at the mines and this also is creating a shortage.

Local retailers have raised the price to \$8.50@8.75 for bituminous block and \$8.25@8.50 for run-of-mine, delivered. It is said an extra 25c. will be added to these prices in July.

ST. LOUIS

Users of Steam Coal Are Hard Pushed—Situation Is Critical in Country Districts—Great Demand for Coal Brings Fancy Prices—Railroads Take Bulk of the Coal—Labor Shows Much Unrest.

Conditions in St. Louis are fairly good excepting on steam sizes; many plants are hard pushed and purchasing agents are busy trying to keep sufficient coal ahead.

In the country districts the situation is critical. This is especially so in places where coal is used for threshing, and it is going to handicap the wheat crop seriously unless something unusual happens in the next couple of weeks to get coal through.

Buyers from Chicago and northern cities are here in large numbers and accordingly little coal gets to its normal market, as fancy prices are offered. Standard is moving north at \$5@5.50 for all sizes. A few operators are refusing to ship coal north and are taking care of their regular trade at about \$3.25@3.50 and as high as \$4.

In the Mt. Olive field prices are about \$3@3.50 for all sizes and the regular trade is getting the preference.

The railroad tonnage in both of these fields is heavy. The mines work on commercial coal from one to 1½ days a week; railroad mines get four to five days a week.

In the Carterville field working time averages about three to four days a week, with large railroad tonnage included. The Missouri Pacific mines fare badly, as that road still insists on taking coal, and many points on this system are without fuel.

Practically no anthracite, smokeless or Arkansas fuel is coming into St. Louis. Little coke is available and smithing coal is out of the market. Operators are asking from \$8 to \$10 a ton.

DETROIT

Michigan Is Embargoed Against Coal from Illinois and Indiana—Assistance of Public Officials Is Urged To Secure Freer Movement of Coal—Anthracite Situation Is Serious.

Bituminous—In the action of the railroads in placing embargoes against the movement of coal from Indiana or Illinois into Michigan, Detroit coal men see a new discrimination against the local market. Predictions are being made that unless relief is obtained speedily, consumers of bituminous coal

in Detroit will be obliged to pay \$20 or \$22 a ton for their supply next winter.

Owing to the strong demand from tidewater markets, practically all the West Virginia and Kentucky coal is being shipped to the East, little coming to Detroit except occasional small consignments to apply on old contracts. The greater part of Detroit's present inadequate supply is coming from mines in Ohio and this has been supplemented to a small extent by shipments from Illinois and Indiana, which are now reported shut off.

The Ohio coal is selling at the mines (on a short ton basis) at about \$7.50 for lump, \$7 to \$7.25 for mine-run and around \$6.75 for slack.

At a meeting of the Detroit Coal Exchange (June 24) an opinion was expressed that present high prices for bituminous are the result of efforts of purchasing agents for industrial plants who attempt to buy direct from the operators at a price higher than the market.

A committee of the Coal Exchange will urge the Board of Commerce to assist in bringing about a freer movement of coal to Detroit. The assistance of the governor, the mayor and common council of Detroit and of Michigan's senators and representatives will be sought.

Anthracite—There is little anthracite coming into Detroit. The supply is small and irregular and retail dealers are unable to get sufficient stock to fill orders they have been carrying on their books for weeks. Unless the situation is relieved in the near future, many household consumers in Detroit may be unable to get a supply of anthracite for next winter. Distribution is already far behind.

South

BIRMINGHAM

Heavy Demand for Coal Cannot Be Supplied Until More Cars Are Provided—Little Spot Coal Is Available—Strikes Keep Output Down.

The whole situation affecting the coal trade here is summed up in transportation and production. There is a heavy and continued demand for all grades of coal which cannot be supplied until more cars are provided in order that the mines may operate regularly.

The car supply the past week has been about 50 per cent of requirements at commercial mines and domestic operations, and from 90 to 100 per cent at contract mines. Industrial needs provided for by contract cannot be fully supplied under present conditions, hence the only available coal for the spot trade comes from small operations which dispose of their output as mined.

This tonnage is of medium or low-grade coal and its volume is not sufficient to give any material relief, and it brings a premium of from \$2 to \$4 per ton if the holder sees fit to accept this high figure. Domestic sizes are

also scarce, the supply available moves slowly and retailers are not making much progress in stocking up, especially in the better grades.

LOUISVILLE

Production Is Light and Prices Continue Firm—Priority Rulings and Possible Zoning of Coal Interest Operators—Dealers and Consumers Are Not Stocking Coal.

Prices continue strong. Demand heavy for steam and byproduct coal, with production light. Prepared sizes in small production, with fair demand from North. Louisville retailers report very light business.

The shortage of cars and resulting small production, which has been less than two days' run for the past two weeks, is resulting in prices remaining firm, although the market is not increasing quite as rapidly just now as earlier in the month.

The market is quoted at around \$9@9.50 a ton on the best grades of gas coal. Gas coal is the big item in sales, although all other grades are selling well, but not commanding as high prices.

Coal men are now considering possibilities of priority rulings, and also of possible zoning of coal from the various fields in an effort to improve car supply. While some operators are opposed to zoning, as it would cut off excellent markets, others are of the opinion that it would improve car supply materially, and make for better production as a whole.

Retailers are not stocking coal at present markets, and are merely buying enough coal to supply immediate demand. In fact retail prices on eastern Kentucky coals today are lower than mine prices. Stocking of domestic consumers is very light.

Quotations on mine-run coal per ton at mine from the three principal grades produced in the state are as follows: Gas coal, \$9@9.50; non-gas, \$8@8.50; western Kentucky, \$5@5.50. Production of prepared sizes continues very light, with prices practically unobtainable.

West

SAN FRANCISCO

Price for Domestic Coal Is Increased, with No Change for Bunker Fuel.

The upward tendency in prices predicted some time ago has materialized here in the domestic trade, with no change in the price for bunker coal. Large steamships are coming here this summer in good numbers for the Utah coal supplied by the King Coal Co. A further advance may be expected in the fuel sold to the factory and household trade.

The bituminous price, f.o.b., mines, wholesale, Utah and Wyoming, per net ton, is as follows: Stove and lump, \$4.50. The bunker price is \$13.55.

News From the Coal Fields

Northern Appalachian

FAIRMONT

Output Is Less Than 40 Per Cent in Northern W. Va. Fields—Curtis Bay Is Embargoed—Lake and Inland West Shipments Are Increased—Prices Drop Slightly.

Production was still at an extremely low ebb in northern West Virginia regions during the period between June 14 and June 19, lack of cars still holding back the output in that part of West Virginia to quite a serious extent—less than 40 per cent.

Producers were debarred during the week from shipping any coal to Curtis Bay for export, there being a serious congestion at this tidewater terminal of the Baltimore & Ohio. In fact over 1,700 cars awaited dumping at the piers, while to the west of Baltimore there were 2,750 car loads of coal awaiting unloading.

This situation was relieved by an embargo on Curtis Bay. One of the tidewater outlets still open for northern West Virginia coal, however, was Port Reading and it was also possible during the weekly period to ship to Port Richmond.

Numerous embargoes applying to eastern shipments on all roads were having a decided tendency to increase the volume of western tonnage and there were further increases in Lake and Inland West shipments; although industrial concerns in the East endeavored to hurry shipments eastward in order to avert a complete suspension of their operations.

Tidewater embargoes had a good deal to do with driving prices in northern West Virginia downward on June 17, the fall in some instances being from \$1 to \$1.50 a ton, but there was a partial recovery on Saturday, prices climbing back about 60c. a ton.

CONNELLSVILLE

Car Supplies Are Slightly Poorer—Spot Prices Are Higher—Contract Market Is Excited, with Buyers and Sellers Far Apart.

Car supplies for coke loading in the Conneltsville district have decreased a trifle for two or three weeks past, and there is not much hope of an early restoration of the March output, production having lately averaged about 70 per cent of the March rate.

Coke operators express the opinion that the priority order in favor of car supplies to coal mines will operate disadvantageously to the shippers of coke. The order may react upon the Connelts-

ville coke trade in another way, by increasing supplies of coal to byproduct ovens and thus decreasing the demand for coke in the open market.

The spot-coke market has experienced a further advance in the past week—about a dollar a ton. The advance seems to be the result not of increased scarcity of coke, but of increased willingness on the part of consumers to pay fancy prices, as they have become more accustomed to these high prices.

Some coke operators are predicting an advance in pig iron to \$50 or \$60, but their arguments are not accepted in all quarters. The lowest flat price quoted on second half furnace coke seems to be \$12, a price that does not interest the average furnaceman.

Basic pig iron has advanced 50c., or \$44, valley, so that ratio contracts at 4-to-1 (as now offered) would produce \$11 for coke if pig iron stayed at the present level. Thus a \$12 average could be attained only by a very considerable advance in pig iron.

The market is quotable at about \$16 for spot furnace coke; \$16 to \$17 for spot foundry; \$12 asked on contract furnace and \$12 on contract foundry—all quotations are per net ton at ovens.

The *Courier* reports production in the Conneltsville and Lower Conneltsville region, in the week ended June 19, at 178,730 tons, a decrease of 6,500 tons.

PITTSBURGH

Better Transportation and Increased Production Improve Coal Situation—Bidding by Export Buyers Decreases, Due to Embargoes—Easy Market Would Follow Betterment—Prices Are Declining.

Coal supplies for local consumption have increased, and a downward trend in prices has been established, by the double influence of the railroads functioning better as to domestic deliveries and worse as to shipments to Tidewater.

The 100 per cent priority order of the Interstate Commerce Commission as to car supplies to the coal mines, in place of the 50 per cent priority, previously in force, has resulted in an improvement in car supplies and a consequent increase in coal shipments.

As to the coal market itself, the more important influence of the embargoes on shipments East is a decreased bidding for coal by export buyers. The very high prices lately ruling for Pittsburgh district coal, have been due largely to the wild bidding of export buyers, who exerted an influence upon market prices quite out of line with the volume of their purchases.

While the present rate of production in the Pittsburgh district (with the recent increase) is only about 50 per cent of rated capacity, the production is much more than one-half the actual requirements, and there is reason to believe that a relatively small further increase in car supplies would put the market in an easy position and give all consumers a fair supply. The shortage in cars, furthermore, is not the full measure of the restriction in output, on account of the extraordinary heavy duty being performed by the Monongahela River.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

BITUMINOUS COAL.

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
June 5b.....	9,141,000	221,067,000	8,927,000	184,004,000
Daily average.....	1,660,000	1,654,000	1,488,000	1,377,000
June 12b.....	10,269,000	231,335,000	8,485,000	192,489,000
Daily average.....	1,711,000	1,657,000	1,414,000	1,379,000
June 19c.....	9,956,000	241,291,000	8,681,000	201,170,000
Daily average.....	1,659,000	1,657,000	1,447,000	1,382,000

ANTHRACITE

	1920		1919 (a)	
	Week	Calendar Year to Date	Week	Calendar Year to Date
June 5.....	1,495,000	36,382,000	1,703,000	33,351,000
June 12b.....	1,907,000	38,289,000	1,695,000	35,047,000
June 19c.....	1,810,000	40,099,000	1,753,000	36,800,000

BEEHIVE COKE

United States Total				
June 19c	Week Ended June 12b	June 21	1920	1919a
1920	1920	1919	to Date	to Date
373,000	400,000	286,000	10,127,000	9,225,000

(a) Less one day's production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision. All figures in net tons.

NORTHERN PAN HANDLE

Cars for Commercial Loading Average 30 Per Cent in Pan Handle—Mines Operate One and Two Days a Week in Ohio Near River.

Ground was lost after the middle of June in the Northern Pan Handle mining regions of West Virginia. In that section conditions were not so propitious as during the first half of June, the average car supply for commercial loading after June 15 being only about 30 per cent, with the result that production was correspondingly decreased.

The rail movement was said to be reasonably good and lack of cars was the sole limiting factor. The carriers operating in the Pan Handle region claim it is impossible to even approach a 50 per cent supply to the coal industry under present conditions.

During the week ended June 19 no relief from a steady and heavy assignment of cars had been secured, such assignment of course making serious inroads on the supply of empties generally available for the loading of fuel other than for railroad purposes.

Transportation conditions in the Eastern Ohio fields bordering upon the Ohio River were just about on a par with those in the Northern Pan Handle region and hence production was being much curtailed in that field. In some parts of that particular section, in fact, mines were not being operated more than one and two days a week.

Middle Appalachian

NEW RIVER AND WINDING GULF

There Is Less Than a 50 Per Cent Run on the C. & O. Against Over 60 Per Cent on Virginian on the Gulf—New River Ships Some Coal West, But Bulk Goes to Tide.

There was a slight upward swing to production in the New River and Winding Gulf smokeless fields of West Virginia in the week ended June 19. Insofar as the Chesapeake & Ohio R.R. was concerned, it was unable to help either one of the smokeless fields referred to more than from 40 to 45 per cent.

An order effective June 24 stopped the export coal movement on the Winding Gulf and diverted coal to New England, Inland East points and to the Lakes.

As the result of the pooling arrangement at Sewell's Point (the tidewater terminal of the Virginian Ry.) there was a marked improvement in the car supply on the Virginian Ry. in the Winding Gulf district. On the Chesapeake & Ohio there was less than a 50 per cent run of cars as against over 60 per cent on the Virginian.

The output in the New River field crept upward slightly for the week ended June 19, the output for the week being about 114,000 tons as against about 104,000 for the previous period. But the scarcity of loading equipment was still holding mines down to about a 40 per cent production.

New River shippers sent more coal to Western markets, though the tonnage was small compared with Tidewater shipments. Tonnage available for commercial usage was still so limited that there was no softening in prices on New River fuel.

LOGAN AND THACKER

Logan Increases and Thacker Decreases Output—Much Splint Coal Goes to Inland West and Lake Markets—Thacker Strike Costs \$250,000 a Week.

While production continued to crawl upward in the Logan field, as the middle of the month of June was reached, the output lagged further and further behind in the Thacker region, where labor troubles had reduced a number of mines to idleness. Logan is a non-union field and the Thacker now a partly unionized field.

However in both fields it was possible to use all the cars supplied, yet in neither instance was the supply of empties sufficient to enable mines to reach the half-way mark in normal production.

The aggregate output of all Logan mines was about 185,000 tons, or just about 46 per cent of potential capacity, representing an increase of about 5 per cent in production over the preceding week. Mines were still so short of equipment that the loss from a car shortage was about 225,000 tons.

Owing to the larger number of cars obtained from the West, more coal was consigned to Western points than had been true even earlier in June. With splint coal shut out from tidewater, more of that kind of coal was shipped to Inland West markets and to the Lakes.

As most shippers are far behind with their contracts the addition to the output of the Logan region did little to contribute to the general supply of coal available for commercial usage. The price offered for Logan coal was averaging anywhere from \$8 to \$10 a ton with little spot coal available even at that figure.

While many mines in the Thacker field were still in idleness due to labor disturbance, yet all cars furnished the field were being utilized. However, production in the Thacker district is slowly dwindling, being at the end of the third week of June not much more than 80,000 tons. The strike is costing in excess of 50,000 tons a week, or more than \$250,000 a week on the basis of \$5 contract coal.

VIRGINIA

Virginia Mines Increase Coal Output—Charleston, S. C., Fuel Exports Continue—Spot Coal Price Is Not Changed.

A rather material gain was made in the tonnage produced in the Virginia fields during the week ended June 19, the total output reaching 143,000 tons as against 125,000, or a gain of 18,000 tons, the increase being due to the fact that there was not so heavy a loss from a loss due to car shortage. In that respect there was a three per cent gain, a shortage of cars costing a loss in production of 27 per cent. In addition to the tonnage shipped, mines managed to

produce 32,000 tons of coal which were used in making coke.

Despite the improvement in the car supply, so many cars were assigned to be loaded with railroad fuel, that there was little actual increase in the tonnage of coal for commercial purposes produced. There continued to be a shortage of empties at such mines as had no preferential car supply.

No inroads will be made on the export business of Virginia mines since coal from such mines is shipped for the most part through Charleston, S. C., that port being too far away from Boston to be affected by the priority order of the Interstate Commerce Commission.

Little or no change was observed in the price of spot coal from the Virginia fields, the price still hovering right around \$8 a ton.

KANAWHA

Production Gains But Output Is Embargoed to Tide—Bulk of Kanawha Coal Is Applied to Contracts.

Production gained somewhat in the Kanawha field in the week ended June 19 as compared with the previous week, but even with such a gain there was not an output of more than 40 per cent. Day by day, however, with possibly one or two exceptions during the week, more cars were available than had been the case in the period ended June 12.

Although there was twice as much cargo space as there was tonnage in Pool 6 at Newport News, yet Kanawha splint (which goes to Pool 6) was under embargo all last week and hence the export of that particular kind of coal was largely at a standstill.

While tidewater was open to other high-volatile coal during the week, there was nevertheless a heavier tonnage forwarded to the Lakes, the percentage of coal so shipped amounting to perhaps 20 per cent of the Kanawha output.

There was so little free coal available from the Kanawha field, that as high as \$8.50 and even \$10 a ton was being offered for spot shipments. However, such prices had little significance because no orders could be filled, the bulk of production being applied on the fulfilment of contract requirements.

NORTHEAST KENTUCKY

Tonnage Increases Slightly—Most of Output Goes to Inland West Markets—Coal Exports Cease from Local Mines.

Northeast Kentucky mines, although increasing production 6 per cent over the preceding week, were only able to mine 46 per cent of potential capacity, or 130,990 tons, out of a possible 295,470 tons during the week ended June 19. Of the tonnage just given a car shortage was responsible for a loss of 158,035 tons or 53 per cent. Increased production was about equal on both the Chesapeake & Ohio and on the Louisville & Nashville.

By far the greatest proportion of the output of eastern Kentucky, or approximately 80 per cent, was moving to Inland West markets. Only 6 per cent

was going to the Lakes, while railroads were securing about 4 per cent of the output, leaving 10 per cent for inland east movement.

The exporting of coal from Northeast Kentucky mines had ceased although for a time a fair tonnage was shipped to Charleston, S. C., for export. However, the market in northern Ohio, Indiana and Illinois has proved so much more attractive than the export trade, the haul so much shorter and freight rates so much lower, as well as the return of cars so much more expeditious, that Eastern Kentucky shippers have cultivated the markets in the states named.

POCAHONTAS AND TUG RIVER

Smokeless Fields on N. & W. Increase Output—Shipments to the West Are Larger—Tug River Mines Fare Better Than Pocahontas as to Empties.

The Norfolk & Western was just beginning to make it possible to increase the loading of coal in the two smokeless fields of Pocahontas and Tug River during the week ended June 19. Car-shortage losses were still far in excess of the total production in both of these areas, the output in the Pocahontas and Tug River regions and the Thacker volatile field as well not being much over 450,000 tons.

Western empties were not quite so plentiful and the supply from that source was not being sustained. Lake and Inland West shipments, however, were running a little heavier than had been the case during the two preceding weeks of June, nevertheless little of the fuel so shipped was free coal.

Mines in the Pocahontas region got away to a flying start, there being fully 1,200 cars loaded on the first day of the week, that representing about 60,000 tons. Still production was below the 50 per cent level, with a car shortage figuring as the greatest factor in curtailing the output.

Pocahontas mines were able to obtain a somewhat larger number of cars from Western points and reciprocated by increasing Western shipments, though still routing the bulk of the tonnage produced in the opposite direction and to Tidewater.

With the increase in the flow of empties from Western points, it is estimated that Tug River mines were receiving about a 70 per cent car supply and in that respect were faring better than Pocahontas mines. Wagon mines in the Tug River field were cut off from a car supply owing to the need for box cars in the West.

Middle Western

INDIANA

Bureau of Mines Looks for Coal Mine in Which to Store Helium Gas.

An Indiana coal mine in which helium gas (to be used by dirigible balloons) could be stored, is desired by the Bureau of Mines of the Department of the Interior, according to Cairy Little-

john, State Mine Inspector of Indiana. The Government contemplates a trans-continental dirigible balloon route and to do this it must obtain at least four storage stations for helium gas. The Bureau of Mines is considering using one of the Indiana mines for this purpose. The mine must be dry, have a good roof and 200 or 300 ft. of cover. Gas would be stored in the mines under pressure.

State officials of Indiana are considering the feasibility of purchasing 100 coal cars to provide the public institutions with fuel. They say that the coal companies are unwilling to enter into contracts for coal, because of unfavorable production conditions.

The Purchasing Committee so far has been unsuccessful in obtaining bids for coal after the present contracts expire on June 30. The coal companies are loath to enter into contracts as they will be able to market every ton they can produce.

Several ways in which to overcome the situation and keep from buying coal on the market at high prices are under consideration and one of these is the purchase of coal cars. With state ownership, it is alleged car movements can be controlled and cars set at any mine desiring to fill them at a reasonable price.

Another possible solution being considered is the leasing of a mine and while this might insure lower-priced coal, yet it would not insure an adequate supply of cars.

ILLINOIS

Illinois Bureau of Forestry Directs Planting of Trees—Electrical Coal Co. Co-operates—Kind of Trees Planted.

Under the direction of the Illinois Bureau of Forestry, 6,500 trees have been planted recently on the waste land of the Electrical Coal Co.'s tract, near Gray's Siding, west of Danville. Of the total number, 4,000 are pine, being about equally divided between red and Norway pine, jack pine and Scotch pine, all trees of comparatively rapid growth.

The 2,500 hardwood trees, red oak, black locust, ash and yellow poplar, are planted in an area stripped twelve or fourteen years ago, which is grown over with willows and scrub growth.

A desire to save the soil, where the coal has been taken out, and at the same time arrange for timber sufficient for mine props and similar work, to be used twenty or thirty years later, caused the company to appeal to the forestry bureau for assistance. The trees are now about 10 in. in height.

UTAH

Utah Land Board Agrees to Lease Carbon County Coal Land—Terms of the Lease Are Stated—Operators Interested Have Invested Heavily in the Section.

Plans for the extensive development of new coal properties in Carbon County were disclosed recently at a meeting of the State Board of Land

Commissioners with representatives of the Rio Grande Fuel Co.

The land board agreed to lease to the fuel company a section of school land at a minimum rental of \$1 an acre per year for the first two years: at a royalty of ten cents a ton on a minimum production of 50,000 tons of coal for the third year, and a minimum production of 100,000 tons of coal for the fourth year and thereafter.

It was disclosed that the Standard Coal Co. and the Rio Grande Fuel Co. are virtually one concern, and represent interests that already have invested about \$1,700,000 in coal properties in Carbon County.

The coal operators concerned would like to know whether the beds underlying the school section in question will be available to them or not, for the reason that it will have an effect on the laying out of the mine.

Canada

OTTAWA

Canadian Government Officials Investigate the Coal Question—Canada and the United States Should Co-operate—Vast Canadian Resources Must Be Developed.

In the House of Commons at Ottawa on June 17, the Hon. Rodolphe Lemieux stated that coal was recently selling in Ottawa at \$15 and \$16 per ton, and there was no guarantee that it would not go higher. Industries were faced with the necessity of closing down, while western Canadian coal operators were shipping Canadian coal to the United States and the eastern coal mines were shipping to Europe.

He suggested that more coal be shipped from the maritime provinces to Quebec and Montreal, those ports to be made distributing centers for eastern Canada, or that cheap railway rates be given on coal from the west. If the government did not act quickly there would be a panic next fall.

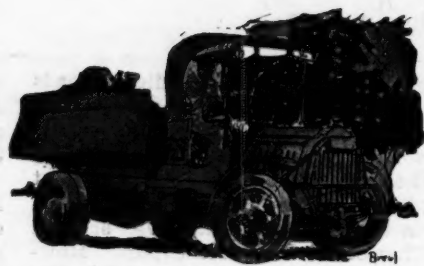
Sir Robert Borden replied that the Government was already taking whatever steps were necessary. Some weeks ago a committee of the cabinet met for the purpose of considering the coal situation.

A Government agent had spent much time in the United States investigating the situation there and endeavoring to speed up coal shipments to Canada. Dealing with exports of coal from Canada to the United States it was said that it must be remembered that Canada is dependent upon the United States for her anthracite. Canada must show a spirit of co-operation in dealing with her neighbor.

The question of a future coal supply must be squarely met by Canada. Canada has ample coal resources, but the difficulty lay in transportation. Canada holds about 80 per cent of the coal resources of the British Empire. The question was to make these vast coal resources available for the use of the Canadian people as a whole.



Mine and Company News



ILLINOIS

Zeigler—The Bell & Zoller Mining Co., of Chicago, is completing plans for the building of a number of houses near its No. 2 mine at Zeigler, after several failures to induce private parties to erect dwellings. It is said that the housing conditions in the vicinity of Zeigler, and, in fact, throughout the Franklin County field, are almost as great a hindrance to production as the car shortage is at the present time.

Christopher—The Old Ben Coal Corporation, which operates a number of modern mines in Franklin County, has organized a mining class for the benefit of persons seeking certificates of competency in mining. The class is not confined to employees of the company, but is open to all who wish to enter and no charge is made. This company is taking an unusual interest in the improvement of the communities where its plants are located; among other things the company donated \$1,500 to help pay and retain the teachers in the schools at Buckner, where one of its largest mines is located.

INDIANA

Clinton—It is said that the largest power contract ever made in western Indiana was signed recently when the Clinton Coal Co., of Clinton, closed a contract with the Wabash Valley Power & Light Co., by which the power company will provide electric current for the operation of three of the Crown Hill mines. Since the mines began operation the company has been generating its own electricity, but investigation showed it would be a saving and an elimination of much trouble to buy the power.

KENTUCKY

Ashland—Operations will be conducted on quite a large scale by the Porter Mining Co. near Lackey, Ky., on the waters of the right fork of Beaver Creek, the new concern having a capital of \$150,000. Those chiefly interested in the new concern are Ashland and Big Sandy people, among them being Dr. M. M. Collins, and Fred Blackburn, of Lackey, Ky.; S. S. Porter, J. E. King and J. W. Kitchen, of Ashland, Ky. The company will develop a tract of about 1,000 acres and will begin at once the erection of a plant and the opening of a mine.

NEW YORK

New York—The John Markle Co., Inc., was recently organized and occupies offices at 28 W. 44th St., New York

City. John Markle is president of this company; A. B. Jessup is vice president, and Harry Hasford is general sales manager. The company was organized to sell the output of the G. B. Markle Co., whose mines are north of Hazleton, Pa., in the neighboring valley. The well known Jeddo and Highland anthracite of this company will be sold by the new sales organization in New York and New England territory.

OHIO

Columbus—The Maynard Coal Co., of Columbus, increased its capital from \$2,300,000 to \$3,000,000. The increase was made to take care of extensions and development work on the properties. The company controls mines in the Pomeroy Bend, Eastern Ohio, in Hazard and in other fields, as well as docks in the upper Lake region.

PENNSYLVANIA

Starford—Robert McTaggart, mine superintendent, and Clark Brown, of Patton, were killed, and Mark Brown, a brother of the victim, Edward Wilkie, of Patton, and Albert Kannar, were painfully burned as the result of an explosion of gas in No. 3 mine of the Glenside Coal Co., at Starford, Indiana County on June 7.

The section of the mine where the explosion occurred had been idle for about a year and had been filled with water. The water was being pumped out preparatory to placing it in a workable condition.

The injured men were making some repairs, and McTaggart and Brown, the fireboss, had just finished inspecting the work and had traveled to about a distance of 50 yards away from the men when the explosion occurred.

Mine inspectors are at work in an effort to determine the cause of the explosion. McTaggart and Brown carried a safety lamp.

The injured men (Mark Brown, Wilkie and Kannar) managed to get to the outside before the deadly after-damp set in.

Wilkes-Barre—The large playground, which covers several acres of the Lehigh & Wilkes-Barre Coal Co. property at Sugar Notch near here was opened recently. This is the second year that this playground has been available to the children. Miss Lucille Morris, of Sugar Notch, is the instructor in charge. The coal company has put the playground in fine condition, there having been a large force of men working on it.

UTAH

Salt Lake City—A tidewater plant, costing \$500,000, for the storage of Utah coal to be used for bunker purposes, is to be built at Oakland, Cal., almost immediately by the Standard Coal Co., it was announced by F. A. Sweet, president of that company.

The announcement came in connection with the hearing before the Public Utilities Commission of Utah on the application of the Utah Terminal Ry. for permission to construct a line from Standardville, in Spring canyon, to a junction with the Utah Ry. company's line.

The contemplated plant would store 250,000 tons of coal. It is to be constructed in an estuary off San Francisco bay, near Oakland.

The plant will enable the coal company to market its product to the shipping trade on the Pacific Ocean.

The application is opposed by the Denver & Rio Grande, which already has a line up Spring canyon. The applicant is made up of three coal companies operating near the mouth of that canyon.

The Utah Railway company, is a subsidiary of the U. S. Smelting, Refining & Mining Co.

WEST VIRGINIA

Huntington—The Logan-Elkhorn Coal Corporation is planning for the development of coal properties in the vicinity of Fleming, Ky. It is planned to install equipment to allow for a maximum of 1,000 tons capacity. The company recently increased its capital from \$200,000 to \$500,000 for expansion. A. B. Ewan is general manager of the company.

Blair—The Opperman Coal Co. at Blair, W. Va., has placed a contract with the Roberts & Schaefer Co. for the construction of its tipple, which will involve changing the present shaker screen to a Marcus screen. The work is under way and will be completed within a short time.

CANADA

Fernie, B. C.—The head office of the Crow's Nest Pass Coal Co., as well as that of two subsidiary companies, the Crow's Nest Pass Electric Light & Power Co., Ltd., and the Morrissey, Fernie & Michel Ry., has been transferred from Toronto to Fernie, B. C. W. R. Wilson, general manager of the company, has been elected to the presidency in place of the late Elias Rogers. A. Klauer, chief accountant for many years, has been made treasurer.

Association Activities

M. O. I. Coal Association

The Michigan-Ohio-Indiana Coal Association convention at Cedar Point, Mich., recently adopted resolutions requesting the Interstate Commerce Commission to take immediate action to compel the railroads to furnish 85 per cent normal car supply for the next 60 days to the mines supplying the domestic coal consumers of Michigan, Ohio and Indiana. This action, the association declared, is necessary unless the three states are to suffer an intolerable domestic coal shortage next winter.

The officers elected were: Homer G. Gill, Columbus, president; H. A. Bauchnecht, Muskegon, Mich., vice president; B. F. Nigh, Columbus, secretary-treasurer; W. H. Kelly, Angola, Ind., W. M. Brown, St. Joseph, Mich., George C. Matthes, Sandusky, S. Pollok, Coldwater, Mich., W. M. Donker, Grand Rapids, Mich., Charles Albright, Cleveland, Louis O'Connell, Tiffin, E. T. Rolfe, Fort Wayne, Ind. and R. B. Mather, Richmond, Ind., members of the board of directors.

Illinois Coal Traffic Bureau

Although agreeing upon the advisability of granting increased freight rates to the railroads, Illinois coal operators presented widely different views to the Interstate Commerce Commission as to the means of applying advanced rates on coal.

F. H. Howard, representing the Illinois Coal Traffic Bureau, told the commission that rate advances should be made with as little disruption of long-existing rate relationships and adjustments as possible, and that the application of advanced rates to coal should be on the same basis of adjustments as proposed by the carriers of the eastern territory.

C. O. Elbert, representing coal operators of the northern Illinois district, declared coal should bear its burden of the advanced rates, along with other commodities, but that the increases should be made on a strictly percentage basis without differentials or the preservation of relationships and adjustments.

Indiana Bituminous Coal Operators' Association

In a statement issued recently, Phil H. Penna, secretary-treasurer of the Indiana Bituminous Coal Operators' Association, said: "The coal operators of Indiana regret the course of the proceedings in the Federal court at Indianapolis and are disappointed that they have to go to trial in November, not because of fear of the outcome of the trial, but because of the inconvenience, annoyance and expense that is involved and because of the false situation in which they are placed before the public by the indictment."

"The charge that we have curtailed production to enhance the price of our product is too silly to men familiar with our industry for serious thought. We could not, if we would; to be charged with it in an indictment is an injustice."

"There is just one thing of value that can come from the trial of this case and that is that there will be public testimony under oath as to the manner in which coal is mined and sold, involving our relations with labor as well as the market, and the public will get a clearer view about many things regarding which it has been mistakenly advised."

Bituminous Mine Inspectors' Advisory Association

The semi-annual meeting of the Bituminous Mine Inspectors' Advisory Association, composed of the bituminous mine inspectors of Pennsylvania was held in the Seventh Avenue Hotel in Pittsburgh, Pa., recently. Chief of Department of Mines Button, of Harrisburg, and Deputy Chief Hall were present. Problems facing the inspectors in their several districts were discussed by all present.

One of the features of the meeting was the demonstration by Captain Burrell and Mr. Deyke and their associates of the Mine Safety Appliances Co., of a newly invented instrument for the detection and determination of the percentage of carbon monoxide gas contained in mine atmospheres in the presence of mine fires, etc.

The bituminous field of Pennsylvania has been re-districted with respect to the various mine-inspection districts. Practically every district has had some mines taken from it and others added in order to make

the work of the mine inspectors more efficient and the mines easier to reach.

The Thirteenth district, which was formerly located in the Pittsburgh district, with headquarters at Elizabeth, has been eliminated and these mines added to the surrounding districts. A new district has been formed to be known as the Thirteenth district with headquarters at Johnstown.

J. Ira Thomas, formerly mine inspector of the Fourth district, at DeBois, will be in charge of the new Thirteenth district and has removed to Johnstown. William Langan, formerly inspector for the old Thirteenth district will move from Elizabeth to DeBois where he will be in charge of the Fourth district.

The adding of another district to the Johnstown group makes four mine inspectors located in Johnstown. Besides Mr. Thomas they are Thomas D. Williams of the Sixth district; Nicholas Evans of the Twenty-fourth; and Charles H. Crocker of the Thirtieth.

Northern W. Va. Operators' Association

Representatives of the Northern West Virginia Operators' Association, including Geo. T. Bell, executive vice president and others of Fairmont and Morgantown, were in Washington on June 11 to present their side of the case against the Monongahela and other railroads.

The case brought before the Interstate Commerce Commission was to compel the roads named in the association's complaint to make up a deficiency in the car supply covering the period beginning July 1, 1919, it being claimed that the railroads, including the Pennsylvania, Pittsburgh & Lake Erie and the Morgantown & Wheeling, were short 16,000 cars.

Kanawha Operators' Association

In the opinion of A. K. Yarborough, traffic manager of the Kanawha Operators' Association, the mines in whose territory have been seriously affected by the assignment of cars, it will be necessary for the Interstate Commerce Commission to prohibit (for a time) the use of open-top cars in loading gravel, crushed stone, etc.

Mr. Yarborough points out that notwithstanding the recent transportation order of the Interstate Commerce Commission, the car supply in the Kanawha field for the period between June 1 and June 8 was only 32 per cent of requirements, as compared with 36 per cent for the corresponding period of May. Mr. Yarborough says:

"While the railroads are apparently doing everything in their power, to increase the car supply for the mines, in my opinion the Interstate Commerce Commission is not sufficiently drastic in the handling of the situation. Thousands of open-top cars are being used for gravel, crushed stone and other commodities that should be embargoed. I believe that an embargo should be general against shipments other than necessities until the present congested condition is relieved."

Northern W. Va. Operators' Association

As a result of a number of conferences, between directors of the Northern West Virginia Operators' Association (special committee on assigned cars acting for the association) and lawyers representing the National Coal Association, which were held at Fairmont beginning June 9, injunction proceedings were instituted in the Circuit Court of Marion County, W. Va., to test the legality of the Interstate Commerce Commission's order permitting the assignment of cars.

The proceedings instituted were against the Baltimore & Ohio R.R. by the Lambert Run Coal Co., on behalf of itself and a large number of other coal operators, for the purpose of insuring the equal and non-preferential distribution of empty coal cars among all mines served by that railroad company.

The acute coal shortage throughout the country which is due primarily to lack of transportation facilities, including coal cars, is greatly increased by the practices complained of.

Similar suits are expected to be started in the immediate future in Alabama, Pennsylvania, Ohio, Indiana and perhaps other jurisdictions served by different lines of railroads in order to enjoin the practices complained of on the lines of other carriers.

Upper Potomac Mining Institute

A paper on "Mine Ventilation," by E. P. Brennan, of Thomas, and on "The Most Common Cause of Failure of a Mine Foreman," by J. C. Messenger, of Beryl, W. Va., were the outstanding features of a meeting of the Upper Potomac Mining Institute held

at Fairmont recently. The papers were well received.

The following honorary members were admitted at the Fairmont meeting: J. C. Watson, president of the Masletter Coal Co., Keyser, W. Va.; R. M. Lambie, head of the West Virginia Department of Mines; R. P. Maloney, general manager of the Dover Coal & Coke Co., Cumberland, Md. After the business session, members of the institute enjoyed a luncheon and entertainment.

Rocky Mountain Branch of the Canadian Mining Institute

At the annual meeting of the Rocky Mountain Branch of the Canadian Mining Institute, which was held at Fernie on May 27, an instructive paper was read by Robert Strachan, Inspector of Mines, on "The Coal Fields of the Crow's Nest Pass." He told of operations from the year 1873 to the present, dwelt on the abnormalities of the formation and explained some of the methods most useful in overcoming the difficulties and the dangers of extracting coal.

W. P. Williams, president of this branch of the institute, presided and Dr. McDonald, Inspector of Mines, Calgary, acted as secretary. There was an address of welcome by Mayor Henderson, of Fernie, B. C., and a speech was delivered by A. I. Fisher, member of the Legislative Assembly.

Mr. Fisher expressed the opinion that because of the precautionary measures introduced by the Department of Mines the experiences of the past (always involving interruption to work and loss of production and sometimes causing loss of life) had not been repeated of late.

However Mr. Fisher stated that Government officials welcomed suggestions, particularly from a practical man, and he recommended that Mr. Strachan's paper be submitted to the Department of Mines. W. R. Wilson, general manager of the Crow's Nest Pass Coal Co., entertained the delegates at luncheon. Subsequently the mines were inspected.

Recent Patents

Priming Device. J. J. Hogan, Erie, Pa., 1,337,772. April 20, 1920. Filed Dec. 29, 1917. Serial No. 209,414.

Mine-Car Cager. James A. Nolan, Bowerston, Ohio, 1,337,944. April 20, 1920. Filed Nov. 3, 1919. Serial No. 335,344.

Automatic Checking and Stopping Apparatus for Cars. Frank Leslie Parr, Huntington, W. Va., 1,337,948. April 20, 1920. Filed June 23, 1919. Serial No. 306,148.

Mine Car. Klaus Solle, Youngstown, Ohio, 1,338,046. April 27, 1920. Filed Dec. 16, 1919. Serial No. 345,329.

Pump. John C. Briggs, Cumberland, England, assignor to Aero & General Pump Mfg. Co., Ltd., 1,338,118. April 27, 1920. Filed July 1, 1919. Serial No. 307,983.

Water-Level Alarm Apparatus for Steam Generators. Henry W. Spencer, London and Robert Clark, Kew Gardens, England, 1,338,197. April 27, 1920. Filed June 9, 1919. Serial No. 302,951.

Car Check. George M. Johnson, McDonald, Pa., 1,338,225. April 27, 1920. Filed Sept. 6, 1917. Serial No. 189,987.

Automatic Mine-Car Coupling. John T. Blackledge, Elvins, Mo., assignor of two-fifths to Carr Hartshorn, Elvins, Mo., 1,339,016. May 4, 1920. Filed June 8, 1918. Serial No. 239,008.

Mechanical Stoker. Earl S. Wallen, Lansford, Pa., assignor to Coxe Travelling Grate Co., Hazelton, Pa., 1,339,531. May 11, 1920. Filed Oct. 8, 1917. Serial No. 195,412.

Coal Bag. Harry Josephson, Bridgeport, Conn., assignor of one-half to R. C. McNeil, Bridgeport, Conn., 1,339,851. May 11, 1920. Filed Nov. 7, 1919. Serial No. 336,451.

Single-Roll Crusher. W. K. Liggett, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,339,932. May 11, 1920. Filed July 10, 1916. Serial No. 108,485.

Single-Roll Crusher. W. K. Liggett, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,339,933. May 11, 1920. Filed July 10, 1916. Serial No. 108,486.

Motor Controller. C. T. Henderson, Milwaukee, Wis., assignor to the Cutler-Hammer Mfg. Co., Milwaukee, Wis., 1,339,930. May 11, 1920. Filed June 29, 1914. Serial No. 847,974.

Industrial News

East Pittsburgh, Pa.—Recent advertisements of the Westinghouse Union Battery Co., Swissvale, Pa., have led many to assume that the Westinghouse Electric & Manufacturing Co. was entering the storage battery field. In order to clear away any misunderstanding, the Westinghouse Electric & Manufacturing Co. authorizes the statement that the Westinghouse Union Battery Co. is owned and controlled by the Westinghouse Air Brake Co., at Wilmerding, Pa., and the Westinghouse Electric & Manufacturing Co. is not in any way connected with the manufacture, sale, distribution or service of its product.

Chicago, Ill.—The Ingersoll-Rand Co. of Illinois and the A. S. Cameron Steam Pump Works, Chicago Branch, announce a change in address. On and after May 10 the offices were located at 709 Fisher Building, Chicago.

Stamford, Conn.—The Yale & Towne Manufacturing Co., whose works are at this place, announces some important changes in its organization as follows: The resignation of John B. Milliken, as treasurer and director of this company, was accepted, effective June 30, 1920. Mr. Milliken resigns to enter other fields. Willard L. Case was elected treasurer to succeed Mr. Milliken. Mr. Case's experience has been along the line of banking, industrial engineering and in connection with operation, management, accounting and construction. Another change in the personnel of this company included the election of Edward C. Waldvogel as a director. Mr. Waldvogel has been connected with this company for 15 years, during the last four of which he has occupied the position of general manager, having charge of all sales and advertising.

Pittsburgh, Pa.—The Iron Trade Products Co., of this place, announces the opening of a branch office in the Greenwood Building, sixth & Vine Sts., Cincinnati, Ohio, with C. S. Siebert in charge as district sales manager. Mr. Siebert, who has been in the employ of this company for some time, in the Pittsburgh office, is the son of W. P. Siebert, assistant general manager of sales, Carnegie Steel Co. and will look after business in the Cincinnati territory.

New York, N. Y.—At a special meeting of the board of directors of SKF Industries, Inc., held May 13, 1920, the resignation of G. G. Prytz as president was accepted. Mr. Prytz having been elected managing director of the parent company, with headquarters at Gothenburg, Sweden. At the same meeting F. B. Kirkbride, vice president since the organization of the company, was elected president to succeed Mr. Prytz.

Personals

The Lehigh & Wilkes-Barre Coal Co. announces an important change in plan of organization, which was effective June 1, eliminating division and inside superintendents, substituting for these positions colliery superintendents. The following have been appointed colliery superintendents:

J. B. Tamblin, of Wilkes-Barre, in charge of Hollenback and Stanton collieries, with headquarters at Hollenback colliery, Wilkes-Barre.

J. D. Joseph, of Wilkes-Barre, in charge of South Wilkes-Barre and Buttonwood collieries, with headquarters at South Wilkes-Barre colliery, Wilkes-Barre.

T. R. Gambold, of Ashley, in charge of Sugar Notch and Maxwell collieries, with headquarters at Maxwell colliery, Ashley.

R. G. Carpenter, of Plymouth, in charge of Lance and Nottingham collieries, with headquarters at Nottingham colliery, Plymouth.

L. J. Davies, of Plymouth, in charge of Wanamie colliery, with headquarters at Wanamie colliery, Wanamie.

Edward Griffith, of Kingston, will resume his position as assistant general superintendent, under Douglas Bunting, general superintendent.

All of the men appointed colliery superintendents entered the employ of Lehigh & Wilkes-Barre Coal Company a number of years ago and step by step worked up to their present positions.

Thus J. D. Joseph entered the employ of the company about 34 years ago. He started in as a laborer at Stanton mines as a miner, later was made fireboss and inside foreman. About 12 years ago he was made inside superintendent of Wilkes-Barre division.

T. R. Gambold started in 1902 to work as a company laborer. He later was successively a fireboss at the Empire colliery, inside foreman at Stanton colliery, foreman of Maxwell No. 20 and on May 1, 1919, was inside superintendent of Maxwell No. 20, Sugar Notch No. 9 and Wanamie No. 18.

R. G. Carpenter started to work for the company in the mine engineering department in 1896. He remained in that department up until two years ago, when he was made superintendent of the Plymouth division.

L. J. Davies entered the employ of the company in 1883, as a laborer at Hollenback colliery. For the last 12 years he has been one of the superintendents of Plymouth division.

L. G. Shipley, of Thurmond, W. Va., is the latest acquisition to the growing staff of the Lake & Export Coal Corporation of Huntington. Prior to his connection with the company named, Mr. Shipley was the car distributor for the Chesapeake & Ohio at Thurmond, W. Va.

Gordon K. Nigh has been appointed manager of the Huntington branch of the Interstate Coal & Dock Co., that company having just opened an office in Huntington, W. Va.

Lieutenant Phil J. Weiss, member of the naval commission to investigate the extent of the Mantanuska, Alaska, coal beds and their value as a possible source of supply for the U. S. Navy, arrived in Seattle, Wash., recently. He will leave for Alaska soon, to remain until November.

H. H. Boyd, for the past two years with the Bell & Zoller Mining Co., operating at Zeigler, Ill., has resigned as chief engineer of that company and is now assistant bridge engineer for the Missouri, Kansas & Texas R.R.

J. B. Hurley, of the Fuel Department of the Wabash railroad, was recently elected as president of the International Railroad Fuel Association, at a convention of the organization held in Chicago.

The Ohio State Public Utilities Commission has named inspectors at four important Ohio rail centers to serve on the joint committee representing the Interstate Commerce Commission, the railroads and the shippers, in an effort to relieve the car congestion. The inspectors who will represent the Ohio Utilities Commission are **William Kelly**, **C. C. Thorpe**, **H. M. Gray** and **T. H. Burke**.

W. R. Wilson, general manager of the Crows Nest Pass Coal Co., has been elected president in succession to the late Elias Rogers. He will continue to hold the position of general manager. The head office of the company has been removed from Toronto to Fernie, B. C., where the principal operations are carried on.

Colonel Edward P. Merrill has been appointed general manager of the Dominion Iron & Steel Co. and the Dominion Coal Co. and their subsidiaries. He has had a wide experience in mining and metallurgical affairs. He developed and operated extensive coal mines in the United States, was three years in Mexico superintending the electrification of mines and the construction of reduction plants and served overseas with the U. S. Air service. **H. J. McCann** has been appointed assistant general manager of the Dominion Coal Co.

John T. Cartright, of Dorranceton, Pa., has resigned from the position of superintendent of the Hillman Colliery Co., of Wilkes-Barre, Pa., to accept the position of general superintendent of the Scranton Coal Co. He succeeds the late Daniel H. Young, of Scranton.

Mr. Cartright was born in England and came to this country when a boy. His parents settled in Nanticoke. While still a youngster he started work in the mines for the Susquehanna Coal Co. At the age of 18 he went on the engineering corps of the same company and for 13 years followed this line of work.

Mr. Cartright held the position of inside foreman for six years when he left to assume charge of the Mount Jessup Coal Co. at Jessup, Pa. where he remained until 1915. In that year he went to Schuylkill County to direct the Jessup company's workings at that place. He came to Wilkes-Barre in 1918 as superintendent of the Hillman Colliery Co.

Coming Meetings

American Mining Congress will hold its annual meeting at Denver, Col., Nov. 15. Secretary, J. F. Callbreath, Munsey Building, Washington, D. C.

American Institute of Mining & Metallurgical Engineers will hold its fall meeting Aug. 20 to Sept. 3. It is proposed to leave Buffalo by steamer and cruise through the Lakes, the first stop being at Houghton, Mich., after which the party will visit Duluth and the Iron Ranges of Minnesota, spending a day or two in Minneapolis on its return. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

New York State Coal Merchants' Association will hold its annual meeting Sept. 9, 10 and 11 at Richfield Springs, N. Y. Treasurer, G. W. F. Woodside, Albany, N. Y.

Mine Inspectors' Institute of America will hold its annual meeting July 13, 14 and 15 at Cleveland, Ohio. Secretary, J. W. Paul, Pittsburgh, Pa.

Illinois and Wisconsin Retail Coal Dealers' Association's annual meeting Aug. 4 and 5 at Milwaukee, Wis. Secretary, I. L. Runyan, Chicago, Ill.

Indiana State First Aid Meet at Clinton, Ind., July 5, under the auspices of the Indiana State First Aid Association, with the co-operation of the Clinton First Aid Association, Chamber of Commerce, Indiana Coal Operators' Association, United Mine Workers of America, Bureau of Mines, and State Mine Inspection Department.

The Rocky Mountain Coal Mining Institute, in conjunction with the Colorado Metal Mining Association, the local chapters of the American Mining Congress and the American Institute of Mining & Metallurgical Engineers, and the International First Aid Meet, will hold its annual meeting Sept. 9, 10 and 11 at Denver, Col. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council will hold its 1920 congress on Sept. 27 to Oct. 1 inclusive at Milwaukee, Wis. General manager, C. W. Price, Chicago, Ill.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 14 at McAlester, Okla. Secretary, F. F. LaGrave, McAlester, Okla.

Obituary

Charles Blizard, third vice president of the Electric Storage Battery Co., of Philadelphia, died on June 12. Although born at Steven's Point, Wis., 56 years ago, Mr. Blizard was educated in the East, graduating from the Brooklyn Polytechnic Institute. In 1893 he became associated with the Electric Storage Battery Co., as manager of the New York office, and in 1900 he was moved to the home office in Philadelphia in charge of Sales. In April, 1906, he was made third vice president, which position he retained until the time of his death.

Trade Catalogs

Pulmors—Smith & Serrell, 90 West St., New York, N. Y. Bulletin 201. Pp. 11; 6 x 9 in.; illustrated. Description of method of preventing the slipping of belts on pulleys.

Davis-Bournonville Oxy-Acetylene Apparatus—Davis-Bournonville Co., Jersey City, N. J. Catalogue. Pp. 16; 6 x 9 in.; illustrated. Description of acetylene generators, welding and cutting torches, pressure regulators and portable outfits.

Economical Handling and Storage of Coal, Ashes and Other Materials—Guarantee Construction Co., 140 Cedar St., New York, N. Y. Bulletin 124. Pp. 40; 8½ x 11½ in.; illustrated. Description of apparatus and installations.